

OBSERVATIONS

ON THE GENUS

MESEMBRYANTHEMUM.

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MESSEMBRYANTHEMUM

OBSERVATIONS
ON THE GENUS
MESEMBRYANTHEMUM,
IN TWO PARTS;
CONTAINING
SCIENTIFIC DESCRIPTIONS
OF ABOVE ONE HUNDRED AND THIRTY SPECIES,
ABOUT FIFTY OF WHICH ARE NEW;
DIRECTIONS FOR THEIR MANAGEMENT;
NEW ARRANGEMENTS OF THE SPECIES;
REFERENCES TO AUTHORS;
AND A GREAT VARIETY OF
CRITICAL, PHILOSOPHICAL, AND EXPLANATORY
REMARKS,

BY
ADRIAN HARDY HAWORTH,
LATE OF COTTINGHAM, YORKSHIRE,
NOW OF LITTLE CHELSEA, MIDDLESEX.

—“As this tribe is incapable of being advantageously preserved in a *Hortus Siccus*, there is no part of Botany that calls more essentially for a separate publication.”

Pulteney's Progress of Botany in England.

“Most of the plants of this genus have beautiful flowers, which appear at different seasons of the year; some of them flower early in the Spring; others in Summer; some in Autumn; and there are others which flower in Winter; and many of them produce their flowers in such quantity, as that when they are expanded, the plants are entirely covered with them: they have all of them thick succulent leaves, but some of the species are much more so than others, and the figures of their leaves vary so much in the several species, that they afford an agreeable variety when not in flower.”

Miller's Gardener's Dictionary, ed. 7.

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M.DCC.XCIV.

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OSTERVA TIONS

ON THE GENES

MESSEMBRYAN THE

IN TWO PARTS

CONTAINING

SCIENTIFIC DESCRIPTIONS

OF ABOVE ONE HUNDRED AND THIRTY SPECIES

OF THE ORDER OF INSECTA

OF THE CLASS OF ANIMALS

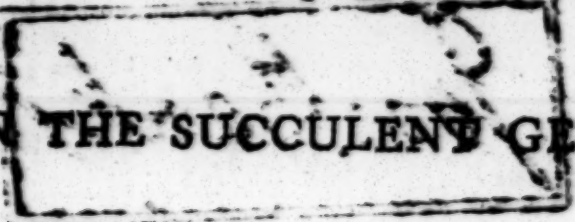
RESPECTING THE HISTORY

AND VARIETY OF

For Banks

TO THE MEMORY OF
RICHARD BRADLEY, DECEASED,
WHO WAS PROFESSOR OF BOTANY IN THE UNIVERSITY OF
CAMBRIDGE,

AND WHO UNDERTOOK
A GENERAL HISTORY OF SUCCULENT PLANTS,
FIVE DECADES OF WHICH HE LIVED TO FINISH,

THESE OBSERVATIONS

ON THE SUCCULENT GENUS
MESEMBRYANTHEMUM

ARE INSCRIBED

BY THE

AUTHOR.

TO THE MEMORY OF
RICHARD BRADLEY
WHO WAS PROFESSOR OF BOTANY IN THE UNIVERSITY OF
CAMBRIDGE
AND WHO UNDERTOOK
A GENERAL HISTORY OF SUCCESSION PLANTS
FIVE DECADES OF WHICH HE LIVED TO FINISH

THESE OBSERVATIONS
ON THE SUCCESSION OF PLANTS
MESSRS. BRYANT & CO. MUM

ARE RESPECTFULLY

AUTHOR

OBSERVATIONS
ON THE GENUS
MESEMBRYANTHEMUM,
IN TWO PARTS;
PART THE FIRST.

CONTAINING
AN HISTORICAL SKETCH OF THE GENUS,
VARIOUS METHODS OF DIVIDING IT INTO
NATURAL, CONVENIENT, AND USEFUL SECTIONS;
AND A GREAT VARIETY OF
CRITICAL, PHILOSOPHICAL, AND EXPLANATORY
REMARKS,

BY
ADRIAN HARDY HAWORTH,
LATE OF COTTINGHAM, YORKSHIRE,
NOW OF LITTLE CHELSEA, MIDDLESEX.

M.DCC.XCIV.

OBSEVATIONS

ON THE GENUS

MESSEMBRYANTHUM

IN TWO PARTS

PART THE FIRST

CONTAINING

A HISTORICAL SKETCH OF THE GENUS

VARIOUS METHODS OF REARING THEM

NATURE, COLOURS, AND HABITS

AND A GREAT VARIETY OF

OTHER INFORMATION

REMARKS

BY

A. L. H. HARDY, F.R.S.

OF THE COLLEGE OF BIRMINGHAM

AND OF THE CHURCH OF BIRMINGHAM

LONDON

P R E F A C E.

THE following pages on the genus MESEMBRY-
ANTHEMUM I have persuaded myself, per-
haps somewhat prematurely, to publish to the Bo-
tanical World.

THE OBSERVATIONS and descriptions they con-
sist of, are entirely the occurrences of the last three
months, during which time I have been perpetually
engaged in searching after the very numerous and
very beautiful subjects of this extensive genus, in
most of the Nursery Gardens and principal collections
of exotic plants in the environs of London.

My researches have been successful beyond my
expectations, and I have had almost the daily plea-
sure of adding the descriptions of new species to my
memorandums, and of enriching my Hortus Siccus
or Herbarium, with the specimens of them, after I
had committed their most characteristic distinctions
to paper, never dreaming in the beginning of the
business, that they would either so quickly become
bulky, or that I should *so soon endeavour to transmit
them to posterity.*

IF I had thought so at the time most of the earlier
descriptions were made, I should, I am sure, have
been somewhat more guarded in the construction of
their characters.

A

AND

AND I likewise should have used every exertion to have reduced the number of ambiguous names, which at present stand ranked under my division of the genus, "*Insertæ tribus.*"

I CANNOT avoid considering them the opprobrium of my list, and have even denied them a continuation of the marginal numerals which attend the more regulated species.

MY only reason for inserting them at all, is, that some one, possessing better opportunities, and steadier abilities than myself, may reduce them to the sections they belong.

I HAVE thought it most advisable to throw the first or introductory part of my OBSERVATIONS, or as it may perhaps more properly be called, the miscellaneous or heterogeneous part, into Heads or Chapters, that the nature of their contents may be more advantageously reconnoitred in their Titles.

I HAVE given no figures or engravings, and for three reasons, which I shall be candid enough to declare :

FIRST, I never met with all the new species in flower ; some few of them indeed have not as yet been introduced into this country.

SECONDLY, In some few of the Collections I visited, I was unable to obtain specimens
proper

proper for drawing, although many of the plants I wanted were finely in bloom, and

THIRDLY, The expences attending the drawing and engraving of plants, are, (I have had the mortification to be told,) in undertakings of this nature at least, somewhat more certain than the reimbursement of such expences.

THAT others may not want the opportunity of inspecting themselves the plants I have described in the following pages, it may not be entirely useless or unnecessary to make mention of some of the principal Gardens, in which I have observed good Collections of MESEMBRYANTHEMA.

THEY ARE,
indisputably first,

THE KING'S AT KEW.

SECOND, That of — Simmons, Esq. Paddington, in the number of living species.

THIRD, Mr. Lee's Nursery at Hammersmith, in point of rarity, not in number of living species.

FOURTH, The Worshipful Company of Apothecaries Physic Garden at Chelsea.

FIFTH, Mr. Malcolm's Nursery at Kennington, where I found a new species, which I met with in no other Collection.

SIXTH, Mr. Curtis's Botanic Garden at Brompton, to which as a subscriber I have the pleasure to belong.

SEVENTH, Messrs. Thompson and Co's Nursery at Mile End, where I met with another new species, which I have not seen in any other Collection.

EIGHTH, Messrs. Grimwood and Co's Nursery, Kenfington, where I also found another new species, in no other Collection, (so far as I know at least) which was lately raised by the foreman from Cape seed. The foliage of this plant I have minutely described under the name of denticulatum, from a small specimen which he obligingly gave me.

NINTH, Under this head may be added many other Collections of less note; for—there has been a good number of the old species at John Orme's Esq. Walham Green, but not being (when left to themselves) of so durable a nature as the fine and beautiful old forest trees there, they are fast upon the decline.

My

My greatest wish is, that my OBSERVATIONS on MESEMBRYANTHEMA may stimulate some one, more able than myself, to take up the subject, and figure the genus.

I MUCH regret that it has not been in my power to give complete descriptions of all the species; it was my original intention to have done so, but the season was too far advanced for procuring proper specimens of many of them, before I had made up my mind to publish (in the present year) the remarks I had by me; and others, I have already observed, I was not able to obtain proper specimens of, although I had the mortification of seeing them copiously covered with flowers.

I HAVE, however, described all the sorts throughout the OBSERVATIONS, as far as my specimens would permit, and in no one instance, but from the real plant, or a portion of it, except where the contrary is particularly expressed.

SOME of the specimens I have described, I will not omit to mention, were extremely imperfect and small, but wherever that was the case, I have not failed to point out in what respect they were defective, that the reader may be enabled to judge what degree of confidence is proper to repose on characters drawn from such imperfect materials.

IN a word, I have, throughout the whole, endeavoured to make him as much acquainted with every part of the subject, as my specimens and my descriptions of them, have made me acquainted with it.

A. H. HAWORTH.

*Little Chelfea, }
Nov. 1, 1794. }*

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POSTSCRIPT.

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PART THE FIRST.

CHAPTER I.

CONTAINING AN HISTORICAL SKETCH OF THE GENUS MESEMBRYANTHEMUM AND OF PROFESSOR BRADLEY, WHO WROTE THE HISTORIA PLANTARUM SUCCULENTARUM.

I CONCEIVED an early attachment to Botany and Gardening, particularly to that department of Horticulture which applies to the management of succulent plants, and more especially to that large portion of them which is so well known by the name of MESEMBRYANTHEMUM.

MESEMBRYANTHEMA, or as our English Gardeners call them, Fig-Marygolds, (from their seed vessels looking somewhat like little figs, and their flowers distantly resembling those of the common marygold,) have long been the favourites of most who cultivate plants.

FICOIDES (a term applicable to any thing resembling a Fig,) was the generic name of Tournefort and others; until Linnæus thought proper to reject it in favour of the present term, Mesembryanthemum, a word of Greek composition, signifying a flower which opens in the middle of the day.

MR. MILLER, in his most excellent Gardener's Dictionary, informs us, that the plants of this genus are chiefly natives of the Cape of Good Hope, from whence their seeds were carried to Holland by the industry of the Dutch, and plants raised in many of the curious gardens there, from which they were communicated to various parts of Europe ; that,

THEY were at first called Chrysanthemum by the old botanists, and then named Ficoides by Herman and Tournefort, from their capsules being shaped like little figs ; and afterwards had the term MESEMBRYANTHEMUM applied to them, which signifies a flower opening in the middle of the day, which he adds is what most of the species do ; that,

THERE are three or four of them which open in the evening, and are closed all day, which have been separated from the others by some, and have, on account of their late opening, had the title Nycteranthemum applied to them ; from their flowers being expanded in the evening.

MR. MILLER concludes the paragraph by very properly observing, that as they all agree in those parts of the fructification which characterize the genus, they should on no account be separated.

IN the days of Bradley, succulent plants, by the beauty and splendour of their various coloured flowers ; by their numbers and variety ; by their singularity,

gularity, oddness, and spangled gaiety ; and by the great facility accompanying their cultivation, gained the admiration of most, and they won the esteem of that celebrated writer so much, that he undertook a work which he entituled, “ *Historia Plantarum Succulentarum*,” five decads only of which he lived to finish ; the plates whereof are so characteristic, that the premature death of their author, is to this day at once regretted and felt by the Botanical world.

MESEMBRYANTHEMA are the most numerous of the plants figured in the abovementioned decads ; a proof of the charms they possessed in Bradley’s eye ; the other plants figured are a few Aloes, with some Cacti and Euphorbiæ.

THOSE five decads were published at different periods in quarto, between the years 1716 and 1727, and are now become so extremely scarce, that few have been fortunate enough to see, much less possess them of late.

BRADLEY I think is the only one, who wrote any book exclusively on succulent plants ; on which account, I incline to inscribe and dedicate these OBSERVATIONS on a completely succulent family of plants to his memory : he was the author of more than twenty separate publications, (besides the “ *Historia Plantarum Succulentarum*,”) chiefly on Botany, Gardening, and Agriculture, most of which are very

well known, and allowed to possess much merit for their time; but their use has in a very great measure been superseded by later works.

BRADLEY flourished in the beginning of the present century, was chosen Professor of Botany in the University of Cambridge in the year 1724, and died in the year 1732; a further account of him may be found in the 37th Chapter of Dr. Pulteney's agreeable "Progress of Botany in England."

CHAPTER II.

GREAT INCREASE OF SPECIES OF MESEMBRYANTHEMA; MORE THAN DOUBLED SINCE THE DAYS OF BRADLEY, IN BOTH BEAUTY AND NUMBER,—ALMOST ALL FROM THE CAPE,—MOST COLLECTIONS OF PLANTS ABOUNDING IN THEM—FEW OF THE CULTIVATORS CAPABLE OF DISTINGUISHING THE SPECIES FROM EACH OTHER;—ANNUAL SPECIES PRETTY NUMEROUS ABROAD, BUT EXTREMELY RARE IN OUR COLLECTIONS.—DILLENIUS FIGURES FIFTY FOUR SPECIES OF MESEMBRYANTHEMUM.—THE AUTHOR'S WISH THAT SOME ONE WOULD RESUME THE SUBJECT AND ENGRAVE THE WHOLE GENUS.

IF the individuals of the genus MESEMBRYANTHEMUM possessed such charms in the days of Bradley, when they were not known to be near half so numerous as at present; what ought they to do now, in the more than doubled numbers, which our modern collections boast?

THEIR charms indeed we have found have kept pace with the new additions to the genus; which have thronged upon us in crowds from the Cape; for some of the new ones, discovered by the indefatigable Mr. Maffon and others, are the most beautiful and admirable of their tribe; witness speciosum, spectabile, purpuro-croceum, and others enumerated in these OBSERVATIONS.

It is no wonder therefore, that they should continue the favourites of most who cultivate plants; they are deserving their care, and have a peculiar claim to their nicest attention, for, being so numerous a family, many of the species are, (as is the case in all other extensive genera,) with difficulty distinguished from each other.

ALTHOUGH I have seen no collection of plants without many species of MESEMBRYANTHEMUM in it, I have not as yet been fortunate enough to meet with any one collection, which had near the whole of the sorts enumerated in these OBSERVATIONS; much less have I met with any one capable of distinguishing, and pointing out the distinctions of the sorts, at sight; Mr. Lee, sen. a Nurseryman at Hammer Smith, is reported to know them by the names of Spec. Pl. and Hort. Kew. much better than any one, and is said to have all the species known in this country in his possession; but from real observation, and so far as I am capable of judging, I do not hesitate to say, that he neither does the one, nor has the other.

FAR greater information is to be found in his Majesty's superexcellent Garden at Kew, where I have had the frequent pleasure of contemplating a matchless variety of them in the finest health; and even there, (notwithstanding some half a score annuals make their appearance in Mr. Aiton's Hortus Kewensis) I have not as yet had the fortune to find
more

more than two species with annual roots; they were the beautiful *chrysellium* (common ice plant) and more delicate *pinnatifidum*, (jagged leaved ice plant, or fig-marygold,) figured on the 67th plate of Mr. Curtis's Magazine, nor have I yet seen in any other collection any other annual sort.

THE gardeners and managers of common collections, although they cultivate a great many species, for the most part, know very little about them, beyond their beauty and varied singularity; except perhaps, the great facility with which they are propagated and kept, and the considerable neglect they will occasionally sustain in point of watering, &c. without undergoing the injuries which thousands of other plants would do, under similar hardships; for which latter reasons they have gained, and very deservedly, the favour of most who have the management of plants.

THEIR great and increasing numbers from that never-failing source of beautiful plants, the Cape, and other places, has long demanded the attention of some scientific Botanist to re-arrange and describe them; to point out their æconomy and affinities; and make them known to the world; but notwithstanding their increased and increasing attractions, they have not as yet found either a second Bradley or Dillenius to publish the descriptions they require, and the figures they deserve.

DILLENIUS, a name which is deservedly ranked amongst the very best in the annals of Botany, appears to have been the second, and indeed the last, who has paid any particular attention to the plants which are the immediate objects of this Essay. In the year 1732 he published his valuable "Hortus "Elthamensis," in which, along with a great many other things, equally interesting and new, he figures and describes according to Dr. Pulteney's (in his progress of Botany in England) 54 species of MESEMBRYANTHEMUM.

My only wish in the publication of these OBSERVATIONS, is, that they may have a tendency to excite some one, more able than myself, (and to whom the *living* plants are *more accessible*,) to take up the subject and figure the genus.—It may not be altogether improper to explain what I mean by saying the *living plants* are more accessible to others than myself, which a reluctant relation of the following circumstances abundantly develops,

CHAPTER III.

CONTAINING AN ACCOUNT OF MR. LEE'S MESEMBRYANTHEMA.

EARLY in the spring of the present year, I went to HammerSmith, to solicit the favour of seeing Mr. Lee's MESEMBRYANTHEMA, for I had heard he had got the first collection of them about London; but although I found he had a many rare and nondescript species; I also found his collection wanted a great number of the sorts which I have since seen flourish in his Majesty's matchless collection at Kew.

WHEN I arrived at the nursery, I was fortunate enough to meet with the foreman of the ground; whose civility induced him to shew me all the MESEMBRYANTHEMA he was acquainted with; but as he could not satisfactorily tell me, which of the sorts were, and which were not described, I fell much short of the information I sought; for only seeing the plants in a cursory manner, without any book upon the spot, and being at that time unacquainted with a great many of the Kew catalogue species; I found myself when I got home, unable, either to describe properly the new sorts from memory, (after so slight a first view;) or, to distinguish, with sufficient precision, which were nondescripts, and which were

were already described : and the incongruous vague or rejected names, succulentum, exilium, hæmisphæricum, canaliculatum, &c. which were applied to some of the forts, and which sounded harsh in my memory; rather tended to increase my confusion, than develope the plants.

BUT not disheartened by a few difficulties, I again went to Hammersmith in June last; and thought myself exceedingly lucky to find Mr. Lee (senior) in the ground; of whom, (after introducing myself to him as a general Botanist;) I requested the favour of being permitted to view his MESEMBRYANTHEMA, adding, that I was particularly attached to that tribe of plants; and by way of compliment, told him, I had heard much both of the rarity, and numbers of the forts he cultivated.

AFTER desiring me to stay while he went to, and returned from the house, he shewed me the plants, and by way of trying my strength, I suppose, asked me the names of a great many more forts than he condescended to tell me the names of.

I TOOK the liberty of endeavouring to set him right in the names of one or two of the MESEMBRYANTHEMA, described by Linnæus in Species Plantarum; (particularly the M. glomeratum,) at which he was evidently chagrined; and affected to smile at the idea of my attempting to teach him the

the names of a set of plants, he said he had been accustomed to consider himself familiar with from his youth.—I endeavoured to explain matters, but my remonstrance was not attended to.—The chagrin I thus innocently occasioned, was the foundation to the incivility he shewed me when I went to Hammer-smith again in August, with an intention of examining some of the sorts; which I have not to this day seen the flowers of, and am most doubtful about, and which I knew he would have in bloom about that time, from having observed them preparing for it when I was there in June.

I WENT in August I say, to Hammer-smith again; a third and last time, and thought myself particularly fortunate in finding Mr. Lee (senior) again walking about the nursery; I addressed him in the chearful language of politeness and civility, and again solicited permission to look at his plants; when, remembering the little respect I had already appeared to pay to one or two of his names of MESEMBRYANTHEMA, he answered me, by uttering something like the word *well*, in a tone of voice almost as unintelligible, as it was unwelcoming; and immediatly walked on along the path he was in; and then turned off to the left, to a man at work; to whom I very naturally conjectured he was giving instructions, and from whom I as naturally supposed, he would either return to me; send a man to show me the plants, or a message permitting me to see them alone; or otherwise a denial to view them at all; which last indeed, I did by implication,

tion, tacitly receive ; for he neither returned to me himself, nor sent a message ; but suffered me to wander about by the principal Walk which leads to the Turnpike, until I was tired of waiting ; after which (saturated with disappointment and affront) I came away, without being permitted to look at a single thing I wished to see ; but not, without forming *two* resolutions ; ONE, to record the behaviour which occasioned my perplexity, THE OTHER, to return to the scene of it no more, But to drop this unpleasing digression,

CHAPTER IV.

PERIODICAL OPENING AND FOLDING OF THE FLOWERS OF MESEMBRYANTHEMA. AN ENQUIRY INTO THE NATURE AND CAUSES OF SUCH OPENING AND FOLDING.

THE flowers of MESEMBRYANTHEMA open and shut periodically, very rarely expanding their perfect blossoms, but to a warm sun, whose invigorating beams they seem greatly to rejoice in; * some of the sorts open, in the house, almost as soon as the sun shines upon them in a morning, and continue open several hours, if the sun remains unclouded; but if he disappears half an hour after they have first opened, they close them up; they also very soon close, if put out of a warm stove, when expanded, into the open air, notwithstanding the shining of the sun.

OTHER sorts do not open their flowers while towards noon, and fold them up from the same causes as the first.

AND others do not open while the afternoon;

* By a perfect blossom, I mean such a flower as either has not shed, or is just shedding its farina; which is the sense I wish the word flower to be taken in throughout this essay, except a contrary meaning is particularly expressed.

AND

AND a very few, not until evening; none of which ever expand their flowers without the presence of the sun, and all of which, so far as my OWN OBSERVATIONS have extended, fold up before his setting, except *dolabriforme*, (hatchet leaved) which I have found to open about the hour *caninum*, (dog chap.) shuts, and close about nine in the evening; at least such was the case in August last with plants of that species in a green house, kept as cold as the season could make it.

THE most remarkable circumstance attending the flowering of *MESEMBRYANTHEMA*, is their inability, or as I had almost said, their unwillingness to expand their blossoms, on such days as are not sunny, notwithstanding they had opened them a day or more before; and are capable and ready to open them again, as soon as the sun shines, if he does so before their time of opening is expired; beyond which no power of that charming luminary can tempt them to unfold; such and so great is their strict and temperate perseverance! if it is an allowable appellation.

I HAVE known some of the sorts abstain from opening two and even three successive days in a dull season, although they had expanded before, and afterwards unfolded again to the next sun that suited their time.

BUT

BUT after so long suffering the folded state, and then opening, nature seems to perform the business of impregnation quicker than she would have done, had she met no interruption, or perhaps she might have been preparing matters, while under the folded state; although I am inclined to believe, she could not have effected much in that unfavourable situation; for I have uniformly seen the best fruits or seeds, in those flowers which had been ofteneft opened, and suffered the fewest interruptions.

THIS peculiar œconomy which attends the opening of the flowers of MESEMBRYANTHEMA as related above, naturally gives birth to the following conclusions.

THE seed must be nourished and matured by a particular flow of a peculiar juice into the parts of fructification, and when that flow has gone on a certain necessary time, and been refined, to a certain necessary heighth, the grand business of impregnation is accomplished.

It seems to appear then, that the essential flow of this essential juice, is very forcibly acted upon, accelerated or retarded, if not altered and vitiated, by the presence and absence of the sun's rays; but can we hence allowably infer, that the great business of impregnation is suspended and stands still, in a flower that has once been open, and then suffers the folded state from dull weather for one or more days?

I SHOULD

I SHOULD apprehend it does not stand absolutely still ; but cannot help conceiving that it almost does so, and am convinced that no perfect seed would succeed a flower which had never been naturally expanded.

THE action of the air appears to be necessary amongst the parts of fructuation, to enable them to go through and compleat the functions which nature has destined them to perform ; but I have found the absolute rays of the sun immediately upon the flowers are not in *all cases* essentially requisite, either to their expansion or perfection of seed ; it is only necessary that it should be what we call a sunny day, for flowers which are accidentally shaded in a slight manner by other plants, or by a wall, open nearly at the same time, and observe nearly the same laws, as those which enjoy the contacting beams of the sun upon their surfaces, and are capable of perfecting their fruit ; but it is truly remarkable such shaded flowers, rarely, if ever, open on dull days.

THESE circumstances I have observed in plants put out in the open air in summer,* under the shade of a wall, or any other thing. Do the flowers of Daisy (*Bellis*) and Goatbeard, (*Tragopogon*) observe the laws of opening their flowers after this

* It ought to be kept in remembrance, that the Spring and Summer are the properest times for making these observations, for flowering exotic plants of any kind, are much benumbed, and lose much of their irritability, and often colour, from the pernicious chill of autumnal damps.

manner? Particularly after having once opened, do they remain folded if dull weather intervenes, and then open again to the first sun that suits their hours? Or, after having suffered the folded state subsequent to any particular opening, are they thereby rendered incapable of expanding again? I fancy not.

SOME from hence may be tempted to suppose that, (like ebbing and flowing wells,) a certain number of hours are necessary for nature to recruit the strength exhausted by an opening of the flowers, (of any plant, which like a MESEMBRYANTHEMUM, only expands them periodically,) before she is capable of opening them again; but this kind of theory, however ingenious, would not account for the flowers of a MESEMBRYANTHEMUM remaining folded two days together, subsequent to any particular opening, and then expanding them again, on the fourth day, if sunny; except, perhaps, by way of subterfuge, they say, the required force or strength is not supplied in such sufficient quantities, in dull, as in fine and sunny weather; but I would ask such expounders, what material action can the sun be supposed to have upon such sorts of MESEMBRYANTHEMUM as open their flowers in an evening, particularly noctiflorum, (night flowering) and dolabriforme (hatchet leaved?) which are said only to expand in fine sunny weather, and can rarely have the beams of the sun immediately upon them, (in their expanded state, at least,) from their

late hours of opening, and I never could see even them open their perfect flowers in dull days.

THE different periods and causes of their opening, I am inclined to think may be better accounted for, and explained upon somewhat more rational principles ; upon the principles of their *irritability*.

CHAPTER

CHAPTER V.

THE PERIODICAL OPENING AND FOLDING OF THE FLOWERS OF MESEMBRYANTHEMA ATTEMPTED TO BE ACCOUNTED FOR UPON THE PRINCIPLES OF IRRITABILITY.

ALL the species of MESEMBRYANTHEMUM which I have had the opportunity of observing, require a certain stimulating force or power to enable them to expand their flowers; which stimulus I have found is produced or generated by the action of the sun's rays, either upon the flowers themselves, or upon the circumambient air immediately surrounding them, (which, when properly saturated with the beams of the sun, forms a suitable atmosphere for the expansion of the flowers) for it is not absolutely necessary to the opening of the flowers, that the rays of the sun should actually be in *contact with* them, or, in other words, *shine upon* them; it is entirely sufficient, if the influence of his enlivening beams acts upon the surrounding air as above observed; for as I have said before, flowers casually shaded, expand nearly as well as those which have the beams of the sun shining upon them, but perhaps not quite so early, as they are of course in a somewhat denser and less rarified atmosphere; which circumstances first induced me to account for the periodical expansion

of their flowers, upon the principles of their irritability; although others, from the very same reasons, might be tempted to infer, (were not facts to contradict it, and facts are stubborn things;) that the opening of the flowers depended upon the spring and elastic pressure of the air; and that a cool and consequently heavy atmosphere, compressed the calycine leaves together, with a greater force than the inner parts of fructification, and the spring of the air enveloped therein, endeavoured to expand them; and that a funny, and consequently light and rarified air, by lessening the outward pressure on the calycine leaves, enabled the inner parts, by the assistance of their natural vegetating impulse, to overcome it, and open the flowers.

THE facts which I have alluded to, as militating against the last mentioned doctrine, are at once familiar, obvious, and easy: for, if the opening of the flowers of any particular species of *Mesembryanthemum* depended upon the spring and elasticity of the air acting upon their calycine leaves, it should strictly, and as a natural consequence, follow, that all the perfect flowers of that species could not open in any periodically way, or particular time of the day, as they now do; but at the identical minute, when the mercury of a good thermometer placed near them, indicated upon its graduated scale, the degree of warmth precisely necessary to expand the flowers; and it would also follow, as a consequence equally necessary, that the same degree of

of heat, whether natural or artificial, which had so expanded them, should keep them expanded, not only in the day-time, but in the night, as well as the day; in the dark, as well as the light, until the business of impregnation was performed.

It is scarcely necessary to add, how much more the expanding blossoms of *dolabriforme* and *noctiflorum*, are found to prefer the inviting coolness of a summer's evening, to the fervid warmth of the mid-day's sun.

BUT let me return and discuss the principles of irritability, which the flowers of *Mesembryanthema* appear to be endowed with.

I FIND from the result of my enquiries upon these principles :

FIRST, that almost all the sorts differ some little in their times of opening.

SECONDLY, that the flowers of most, if not all the sorts, I have had the opportunity of examining, both open and close, somewhat earlier the first and second times of opening and closing, than they are capable of doing afterwards. The difference should seem to arise from the impoverished state of their irritability, which impoverishment I have observed to increase a little upon them, with every time of their opening and closing.

THIRDLY, that the closing propensity of the flowers appears to suffer somewhat more every time of folding, than the opening faculty; for the flowers, in proportion to the decrease of their susceptibility, remain longer and longer open, until they are rendered incapable of closing at all, at least, in any regular manner; at which period, the faded petals are seen withering, partly expanding, partly open, (and in some instances, adhering to each other, in a sort of rude folded manner,) about the impregnated germ, which seems no longer to want the protective covering of the folding corolla, but appears swoln amidst its faded and now useless remains.

AND lastly, that no sort is capable of expanding its perfect blossoms in gloomy weather; and that when a dull day intervenes between any two times of opening of the same individual flower, the irritability of that flower is somewhat altered by the interruption.

FROM a proper consideration of all the foregoing circumstances, and from recollecting that some of the flowers of MESEMBRYANTHEMA open in the morning, others about noon, and a few not until the evening, and none at all in gloomy weather, it manifestly seems that the different species require various and different degrees of some stimulating material to prompt and enable them to expand their blossoms, by acting properly upon the principles of their irritability, and it as evidently appears,

appears, that this irritating principle exists abundantly in the beams of the sun.

SUCH MESEMBRYANTHEMA as expand their flowers early in the morning, as bicolorum, &c. are doubtless the most irritable, and open with a smaller stimulus, than the other sorts. Those which unfold rather later in the forenoon (and it is the case with a great many species) take more.

THOSE which open in the afternoon, as caninum and others, yet more of the stimulating materials, and those which do not, open while the evening as dolabriforme and noctiflorum should seem to require most of all.

IN this place however, it is only right to observe, that I have never been so fortunate as to see the perfect flowers of noctiflorum expanded; I have seen some of them in bud, and when they have been on the go off, as the gardeners term it, but never at the critical juncture of expanded perfection; nor have I been able to learn from others with sufficient precision their hour of opening, which from the name we must naturally suppose, is the latest of all.

THE stimulating principle I speak of, and which I have said before, exists so abundantly in the beams of the sun, that whenever they shine a certain necessary time, they invariably cause the perfect blossoms of Mesembryanthema to open and enjoy them,

them, is not however, (although very general,) so absolutely universal as I could wish it to be.—

For there is a circumstance which must not be concealed; that militates against my notions of the abovementioned comparative irritability, which supposes a greater quantity of the stimulating principle, that is, a longer continuance of the sun's rays, necessary to expand the flowers of the late MESEMBRYANTHEMA as dolabrisforme and noctiflorum, than is required to unfold the flowers of the early opening ones, as bicolorum, aureum, &c.

THE circumstance I allude to, is, that the flowers of the late opening sorts, as dolabrisforme and noctiflorum, are capable of expanding, in a sunny afternoon, notwithstanding the forepart of the day had been dull, it should therefore seem almost enough for them, if the sun shines a little before their natural time of opening.

IN order to remove, or at least weaken this difficulty, it will be necessary to admit, that a certain degree of the abovementioned stimulus, is constantly going on in the day time, although the sun does not shine out, and we shall not hesitate to do this, when we call to memory, that every ray of light (in dull as well as clear weather) acts, in a certain degree; after the manner of a stimulus on the flowers of plants, as well as the absolute beams of the sun; for as that enlivening luminary is demonstrated

strated to be, the source of every atom that can be called light, it naturally follows, that every beam of light, in dull as well as clear weather, is to all intents and purposes, a beam of the sun, which if transmitted to us, through a clouded or obstructed medium, is consequently counteracted, proportionably in its effects,—but not entirely deprived of its stimulating powers.

To ascertain precisely the times of opening of all the known species of *Mesembryanthemum*, and the stimulating force, necessary to expand the flowers of each, would form the course of a very amusing and instructive chain of experimental observations, particularly if most of the sorts, (especially the late openers,) were about their time of opening, admitted suddenly to the light of the full sun, after having been kept in the dark a few hours before; the resulting conclusions deducible from experiments might have a tendency to throw a greater light upon the dark and mysterious nature of vegetable oeconomy, than we can at present be aware of.

IN August last, urged by a strong desire to explain these things, I caused a fine healthy young plant of *MESEMBRYANTHEMUM caninum* (dog chap.) and another of *MESEMBRYANTHEMA dolabriforme* (hatchet leaved,) equally healthy, and both with proper aged flowers upon them, to be entirely darkened, by covering them with a large tub
in

In the greenhouse they grew in; after they had felt several hours sun upon them in the fore part of the same day, and about their hour of opening, I suffered them to be admitted to the beams of the full sun, but neither of them made the least effort to open their flowers, although those of *dolabriforme* in particular, had been open for the first time the day before, and opened the following day very well, after having enjoyed the beams of the sun in a sufficient manner.

THE experiment was afterwards repeated on the same subjects, with nearly the same effects.

THESE experiments appear something in support of my system of irritability, by shewing the rays of light, whether sunny or not, (for some of the late sorts open if the afternoon only is fine) are incessantly stimulating, the flowers of *MESEMBRYANTHEMA* to open for a great many hours before they do so.

BUT if their flowers, (especially those of the late sorts, as *noctiflorum* and *dolabriforme*,) have the misfortune to be utterly deprived of these rays, only for a little while the day closes, and their hour of opening passes away before they are able to recover and fetch up the time they have lost.

PERHAPS this may not be entirely the case with the early opening ones, as *aureum* (golden,) and others which open their flowers about nine o'clock in the

the morning, and which are only able to sustain the sun's beams a very few hours before they fold them up again.

It would be worth trying whether aureum could not be made to expand its flowers in the afternoon, by darkening them properly very soon in the morning, and keeping them darkened until the time of their folding expired, and then admitting them to the full light of the shining sun, which perhaps, even at that time, might operate upon them, and expand their blossoms in the afternoon.

Such an event, (which is at least probable,) if it bore the test of repetition, would not only be exceedingly curious and uncommon in itself as counteracting, or at least very greatly retarding an established operation in nature, but would prove to a demonstration my abovementioned system of irritability.

CHAPTER VI.

THE VOLUNTARY MOTIONS OBSERVABLE IN THE LEAVES OF *MIMOSA PUDICA* (SENSITIVE PLANT) *HEDYSARUM GYRANS* (MOVING PLANT) AND *DIONÆA MURCIPULA* (VENUS'S FLY TRAP) SUPPOSED TO BE OF A SIMILAR NATURE TO THE PERIODICAL OPENING AND FOLDING OF THE FLOWERS OF *MESEMBRYANTHEMA*; OR TO ARISE FROM THE EFFECTS OF SIMILAR, BUT WEAKER CAUSES; AND REASONS FOR SUCH SUPPOSITIONS. DR. HILL'S OPINION ON THE MOTION OF THE SENSITIVE PLANT.

IT would also throw great light upon the nature of the motion of the sensitive plant, (*Mimosa Pudica* Linnæi,) and moving plant, (*Hedysarum Gyrans* Lin. Sup.) which doubtless exist under somewhat similar principles, at least every one knows the great effect the rays of light, especially when sunny, have upon those plants; and Dr. Hill, so much known for his multifarious literary productions, had a very high opinion of the power of light on the former of these two sensitive and wonderful vegetables.

THE principles of motion which are known to exist so actively in that miracle of a plant, the fly trap of Venus, (*Dionea Muscipula* Lin.) the spinulose leaves of which, when irritated by the unwary feet of some intruding insect; actually close upon, transfix and kill it, the principles of casual motion
in

in the *Dionea murcipula* I say, are doubtless somewhat analagous to the *forced* motions of the sensitive plant, the *natural* motions of which I am firmly persuaded are regulated by the effects of light upon the surfaces of its leaves, its forced or casual motion so much admired, I mean the shrinking of the sensitive plant's leaves when touched. Dr. Hill thought also depended very much upon the effects of light, and published the experiments he made upon several sensitive plants, to ascertain more clearly the nature of the very high powers of susceptibility in those animated vegetables, which I have somewhere read, but do not possess.

ALL the forced motions of the sensitive plant, or rather the powers which occasion them, are in all probability of the same nature, as the folding of the flowers of *MESEMBRYANTHEMA*, exposed to a cold air, for the leaves of a sensitive plant suddenly exposed to a colder air than it was in before such exposure, close as well as the flowers of *Mesembryanthema* so exposed, but much quicker, that is, the former close almost instantaneously, while the latter require a few minutes to compleat their closing, from whence by the aid of analogy, it is only natural to conclude that the closing principle is the same in both, but the fund of susceptibility exceedingly greater in the sensitive plant, than in the flowers of *MESEMBRYANTHEMA*.

WHAT is vulgarly called the sleep of plants, that is, the folding up of their leaves in an evening, and
which

which is observable in almost all the plants of the natural order, leguminosæ is doubtless dependant on similar principles.

THERE was a piece wrote in Sweden, either by the great Linnæus, or some of his pupils, and published in the amænitates academicæ on this identical subject, entituled "Somnus Plantarum," which I am sorry to add I have not seen, and am intirely ignorant how the subject is handled in it.

CHAPTER VII.

THE OPINION OF THE CELEBRATED MILLER ON
THE MOTION OF THE SENSITIVE PLANT.

MR. MILLER, the celebrated author of the Gardener's Dictionary, of which Linnæus said, *Non erit Lexicon Hortulanorum, sed Botanicorum*, was of opinion that the light had very little or nothing to do with the motions so much admired in sensitive plants.

ON which account, I shall take the liberty of copying the ideas of so practical and eminent a man on this subject, from the 7th edition of his useful and scientific Dictionary, and then comment upon them; for the natural motion of the sensitive plant bears too striking a likeness to that of a MESEMBRYANTHEMUM folding its flowers periodically, to be disregarded in an essay intended to explain that periodical folding. Miller speaking of sensitive plants in general, and there are of several species; says,

“ It would be to little purpose to trouble the
 “ reader with the several idle stories related of these
 “ plants by travellers, or to insert what has been
 “ said by others, who have attempted to ac-
 “ count for the motion of the leaves; of these plants
 “ on their being touched, since there has not been
 “ any

“ any thing wrote on this subject worthy of being
 “ noticed, that I have yet seen, I shall therefore
 “ only mention what I myself have observed in these
 “ plants, for more than thirty years that I have cul-
 “ tivated them.

“ THE first is, that they are more or less, suf-
 “ ceptible of the touch or pressure, according
 “ to the warmth of the air in which they grow;
 “ for those plants which are kept in a warm stove,
 “ contract their leaves immediately on being touch-
 “ ed, either with the hand, a stick, or any other
 “ thing, or by the wind blowing upon them; some
 “ of the sorts only contract their small leaves, which
 “ are placed along the midrib; others not only con-
 “ tract these small leaves, but the footstalk also de-
 “ clines downward on being touched: the first are
 “ called sensitive, and the second humble plants;
 “ but when these plants are placed in a cooler situ-
 “ ation, they do not move so soon, nor contract so
 “ closely as those which are in a greater warmth;
 “ and those which are intirely exposed to the open
 “ air, have very little motion, but remain in one
 “ state, neither expanded nor closed, but between
 “ both, especially in cool weather, nor do these
 “ shut themselves at night, as those do which are
 “ in a warm temperature of air.

“ THE second is, that it is not the light which
 “ causes them to expand, as some have affirmed
 “ who

“ who have had no experience of these things ; for
 “ in the longest days of Summer, they are generally
 “ contracted by five or six in the evening, when the
 “ sun remains above the horizon two or three hours
 “ longer ; and altho’ the glasses of the stove in which
 “ they are placed, are covered close with shutters to
 “ exclude the light in the middle of the day, yet if
 “ the air of the stove is warm, the leaves of the
 “ plants will continue fully expanded, as I have
 “ several times observed. Nor do these plants con-
 “ tinue shut till the sun rises in the morning, for I
 “ have frequently found their leaves fully expanded
 “ by the break of day in the morning ; so it is
 “ plain the light does not cause their expansion,
 “ nor the want of it, that of their contraction.”

CHAPTER VIII.

THE AUTHOR'S REMARKS THEREON.

MR. MILLER is certainly right in saying, the sensitive subjects of the Genus Mimosa are more alive and susceptible in a warm, than a cold atmosphere; but I am inclined to think it does not follow from thence, that heat is the sole cause of the expansion of their leaves, it would be drawing too hasty a conclusion to say so; for then, as above observed of MESEMBRYANTHEMA, a certain degree of heat, on the scale of Farenheit's, or any other thermometer, would not only expand the leaves of the one and flowers of the other, but would keep them perpetually expanded night and day, which is by no means the case with either, in any degree of heat.

It will be more agreeable to reason, to suppose the leaves of sensitive plants are endowed with certain principles somewhat analogous to what I have already denominated the principles of irritability in the flowers of MESEMBRYANTHEMA, which principles being properly [acted upon by a warm and sunny air, or even by a warm still air alone (without which, they soon sicken and die*) most readily effect the expansion of their leaves; which expan-

* No conclusions should be drawn but from vigorous and healthy plants.

tion requires such efforts as the plants cannot keep up longer than a certain limited time, in a certain limited heat, without being exhausted, and under the necessity of folding their leaves, which is what is called the sleep of the plants ; it is in fact a time of rest, necessary for the plants to prepare a fresh stock of juices for the following days evaporation through the open leaves.

MR. Miller is not quite right in saying they entirely lose their sensation when they are kept in the open air, for I have myself had three fine sensitive plants (*Mimosa pudica* Lin.) kept in the open air, from Midsummer to September, that preserved their moving powers pretty briskly all the time, and looked very well ; their leaves and shoots were of a much darker colour than if they had been kept in the house ; and the former, as Mr. Miller observes, only opened about half towards the latter part of the time they were out, but retained their sensation notwithstanding, so as to fall immediately upon the touch, and knock each other down pretty fast.

With respect to their being able to expand their leaves, and keep them expanded in a "*stove covered close with shutters to exclude the light*," as Mr. Miller asserts ; I have to observe, that if they can open their leaves, and keep them open in such a situation, they lose, at least, in that instance, all analogy to the opening and folding of the flowers of MESEMBRYANTHEMA, which I have shewn are incapable

pable of expanding their flowers when deprived of light.

AND I remember reading somewhere, a production (slightly mentioned before) of Dr. Hill, who is sufficiently known by his Botanical writings (whatever intrinsic merit they may have) in which he related several experiments made upon the effects of light on sensitive plants, and asserted, *that they could not at all expand their leaves in a darkened place.*

WHETHER Miller, or Hill, are right, it would not perhaps become me to determine; for I have had no fair opportunity of making any experiments on sensitive plants myself, I shall therefore be content with observing, that I am at a loss to guess why Miller's *stove was covered close with shutters to exclude the light*, except it was for the particular purpose of trying its effect on his sensitive plants; and if that had been the case, why did he not say so, under an article which spoke so minutely of their susceptibility?

IF it was not to try the experiment on sensitive plants, I do not know what it could be for, except, perhaps, to keep out the frost in Winter, and then he would not have covered the upright sashes in the front of the stove, which alone might have admitted light enough to expand the leaves of the plants in question; but he says they were covered so as to *exclude the light.*

WHETHER

WHETHER they were really the Winter covers of the stove against frost, or only the simple covers of a garden frame, is not very material to decide. So I shall hasten to conclude this long, and perhaps improper digression, by observing, that any season which required such covers, must have been an improper one, to draw any *decisive* conclusions from, on such nice subjects, for it is well known, and Miller himself, in the same paragraph, speaks of it, how much Mimosaë suffer in their general health, and more especially in their sensitive faculties in cold, dark, and damp weather.

CHAPTER IX.

DIRECTIONS FOR THE MANAGEMENT AND PROPAGATION OF MESEMBRYANTHEMA, WITH AN ACCOUNT OF THE DISEASES THEY ARE SUBJECT TO, WHICH ARE FEW.

I SHALL now give a few general directions about the management and propagation of MESEMBRYANTHEMA, from actual observations.

THEY all are properly greenhouse plants, in this country, that is, they require no more warmth in the Winter season, than will protect them from the effects of frost.

THEY may also be kept to some advantage in a stove in the Winter months, especially the sorts arranged under my section *Sub-acaulia*, which being of a short and very succulent growth, are not so apt to be overdrawn by the effects of heat, as the upright, woodier, and less succulent kinds are.

AND I do not know but almost all the sorts might be wintered in a common garden frame, or even the windows of a dwelling-house, if kept dry, and very sparingly watered, and those in the frame protected by the cover of a common mat in very severe weather; I have known several of the common sorts kept the latter way pretty well, although amongst a
parcel

parcel of moist herbaceous and shrubby young plants.

SOME of the firm wooded forts I have known exist several winters in the open air, but they were planted upon a dry artificial rock, and upon the top, and close by the base of a dry wall; but they made so pretty and desirable an appearance, that it is well worth any one's causing a few plants to be put in such situations, who cultivate them, for being so very readily increased, a score plants if lost, are of no kind of consequence.

THE forts I have found the hardiest, and consequently the best for this purpose, I will just mention, for the information of those who may not have thought it worth their while to attend so much to those things as I have done.

THE hardiest forts I have observed then, are *M. hispidum*, *M. striatum*, *M. barbatum*, *M. crassifolium*, *M. glaucum*, *M. uncinatum*, and *M. corniculatum* (of these observations); and there are doubtless many others equally hardy; but the finest of the above hardy forts are, *M. striatum*, and *M. hispidum*, especially the former, which the second season after planting I have seen adorn the top of a dry new sheltered wall, with a profusion of its beautiful flowers; and I have had plants of *M. hispidum* (from cuttings only stuck into the common borders in spring) increase to more than a foot in diameter, and produce a profusion of flowers; such luxuriant

plants, however, never survive the Winter; but what is more remarkable, their branches frequently lay upon the ground, pressed downwards by the weight of their thick crop of leaves I suppose, and in that situation become radicant, by throwing out little roots from about the base of the old leaves; a character they have not the least propensity to when kept in a pot; but such luxuriant plants rarely produce perfect seed, “so much do local circumstances affect and alter the most permanent and distinguishing characters of vegetables,” which I have elsewhere remarked*, and which Mr. Miller so often mentioned in this Essay, notices under the article *Cynanchum*, in the seventh edition of his Dictionary, by saying, “most plants which propagate themselves so much by roots, become barren of seeds, especially if their roots have full liberty to extend.”

BUT MESEMBRYANTHEMA thrive best in Winter, in a dry, light, airy greenhouse, not over-stocked with plants, especially such as cause watery vapours to arise by casting their leaves, &c. The house should have proper flues which should be gently worked in cold, and in damp weather, and the plants should not be placed too near each other,

* Essay on *Toxicodendron*, by John Alderson, M.D. p. 14. Amongst a few lesser typographical errors which have found their way into the botanical part of this Essay, is, in several of the copies, in page 20, a supposed quotation from Parkinson.—The inverted commas, and words, “*says he*,” should be expunged.

they should have as much free air admitted to them as possible, when the weather is dry and favourable, and be watered only sparingly in cold weather; if they have as much water given them as will keep their leaves from becoming flaccid, it will be quite sufficient, either in the Winter or any other season; and it is hardly necessary to observe, that the woody sorts require a greater quantity of water than the stemless and more succulent kinds. The fine and rare aloe formed species, such as *tigrinum* (tiger chap) *felinum* (cat chap) &c. which are capable of holding water in their hearts or centers, should not in dull cold weather be watered over their tops, lest it should suddenly cause them to rot, which I have sometimes known happen to those fine sorts, from an imprudent watering over their heads.

In the Summer season, that is, from about May to September, (as the season happens to prove,) all the sorts thrive by far the best in the open air, in a sheltered, warm, and sunny situation, watered no more than is just necessary to preserve their leaves from shrivelling, which I believe is a better direction, than saying watered twice or three times a week, for that with inexperienced people might lead to error, as it is very improbable all situations should require exactly the same quantity of water, or that the plants of all collections, or even all the plants of the same collection, should be put in pots of the same size; and it is sufficiently obvious, that the earth in a small pot must dry sooner than that in a large

large one, and consequently require either a more frequent, or more liberal watering.

THE generality of MESEMBRYANTHEMA are best planted in small pots, not larger than what Gardeners know by the name of thirty-two's; they should be filled with a light, sandy, unmanured soil, that will not bind.

THE smaller sorts, like minimum (least) nuciforme (nut-shaped) &c. thrive best in lesser pots, somewhat like what the Gardeners call sixty's.

MESEMBRYANTHEMA, when rightly managed, are subject to very few diseases or complaints: in the house, they are sometimes, but not often, attacked by the little Acorus, so well known to all Horticulturists by the name of the red spider, which is a most formidable enemy to such tender exotics as are not admitted into the open air in Summer.

THEY are subject sometimes to the attack of aphides of several species, at which time Ants are seen busily climbing about them, either in quest of the aphides themselves, or in search of that sweet liquor, (so attractive to other insects,) which they are known to exude. The Ants do no harm to the plants, unless by excessive and constant numbers they prevent their free perspiration,

I HAVE

I HAVE ONCE OR TWICE seen some of the sorts eaten by slugs and snails, and once only observed the foliage and parts of fructification of *scalpratum*, (graver leaved) most eagerly devoured by the larvæ of the common white butterfly, *Papilio Brassicæ* Lin.

WHEN kept too wet and cold, all the species are subject to rot and canker.

ALL the perennial and shrubby sorts may be propagated and increased very readily, in a stove either from seed or cuttings, not covered by bell glasses. The seed, whether foreign, or ripened in England, (but a great many sorts have not yet flowered, much less ripened their seeds in this country) should be sown as soon as procured (unless in the very depth of Winter) in the poor light sandy soil, recommended for the old plants, kept damp, but not wet, by occasional waterings; its germination will be much assisted and forwarded by the warmth of a gentle hot bed of tanner's bark, (which if not at hand, it will do without.)

THE different species require different lengths of time to vegetate, and all remain a long time in the seed leaf. When the young plants appear, they should have rather more water and air given, until they have got four or five leaves, by which time they will be large enough to transplant into the smallest sized pots that are to be got, filled with the same kind of earth, and kept in the same gentle hot bed,

bed, until they have got fresh roots, and begun to grow again, when they should be gradually hardened to bear the open air, if it is in the Summer season; if not, to be placed near the old plants in the greenhouse; they should have larger pots given them, when they have filled the small ones with their roots; after which they require only the same treatment as the old plants, and will flower when of a proper size.

WHEN raised from cuttings, the shoots need not be large, and the youngest are the best; they should be divested of a few of the old leaves, and if very succulent, laid in a dry shady place from one to twenty-four hours, to heal their wounds, (according to their degree of succulentness) after which they should be planted in the same kind of soil as is mentioned above, with the earth pressed close to them, and very sparingly watered when dry, and kept shaded from the strong beams of the sun until they have struck root, but not covered by a hand glass; for the close and confined air so necessary to the welfare of some kind of plants in the cutting state, might prove fatal to the succulent nature of a MESEMBRYANTHEMUM. * The striking of the cuttings will be greatly accelerated, if they are plunged into a gentle hot-bed; but most of the sorts will succeed very well without that genial assistance, if kept in

* I have seen the woodier sorts succeed well when covered with a glass, but they are more subject to mould and rot, than those which are not covered.

the house; and a great many of the sorts will do extremely well, if planted in the open borders in the Summer season, in the most careless manner, if they are gently watered when dry.

MAY is the most favourable season for striking them; but I have seen almost all the sorts struck, even without the assistance of a hot-bed, at almost all times of the year, in a very moderate stove; of so kindly a nature are these manageable plants!

THE different sorts require different spaces of time to form roots in: some strike in ten days, some take a fortnight, and some require a month or six weeks; but I once had a cutting of *M. crassifolium* (thick leaved) which is a creeping sort, strike or protrude roots through the outward bark in 24 hours after planting: it was that kind of a cutting, which although strictly destitute of the least visible fibres at the time of planting, was in the most favourable disposition for forming them, and might have done so of its own accord, and as it grew upon its parent plant, had it existed there a fortnight longer; it was planted as soon as detached from its parent, by the side of a pine apple pot, in the very warm tan bed of a good stove, in one of the hottest days of August.

THE annual and biennial species are raised from seeds only, treated in the same manner as the seeds of the perennial kinds; if they are watered too freely, although they grow very luxuriant, and make a
fine

fine appearance, they rarely produce perfect seeds ; * so a few plants of each sort should be very much stunted in their growth, by keeping them in small pots, exceeding dry ; and perhaps those stunted ones would be best kept in the house, lest the dews alone should make them grow too luxuriant to ripen seed, for it is material that good seed should be saved from them every year, as they are not to be perpetuated from cuttings like the perennial sorts by any art I am acquainted with ; therefore it is essentially necessary to cause some plants of each species to ripen good seeds, by stunting them as above.

* See my further remarks on this subject, in Dr. Alderson's Essay on Toxicodendron, p. 14.

CHAPTER X.

ANNUAL MESEMBRYANTHEMA NOT TO BE RAISED FROM CUTTINGS, WITH SHORT REMARKS ON THE NATURE OF ANNUAL PLANTS.

ALTHOUGH the annual sorts called chrysellinum (common ice plant) and pinnatifidum (jagged leaved ice plant) are not to be propagated from cuttings; yet cuttings of them treated in the usual way will not only remain alive many weeks, after they are detached from the parent plant; but absolutely perfect flowers, and sometimes seeds after that time.

WHY they are not to be increased from cuttings when the whole order they belong to roots so freely that way, is extremely difficult to conceive; we know that nature has taken abundant care to multiply and disseminate her vegetable productions; and we also know that she has in a great measure limited the extent of that fecundity,—we know too, that plants remarkable for any great increase by roots as butter bur (*Tussilago Petasites*) and others, are often as remarkable for the sterility of their seeds, * and we also know that annual plants remarkable for any particular profusion of seeds, are often of very short duration, and incapable of being increased by any

* See my remarks on this subject in Dr. Alderson's Essay on Toxicodendron, p. 14.

other means; but although we know all these things from observations and experience; we likewise know from the same experience that the law is not a general one; an instance of its not being so, is the *Sempervivum stellatum*, an annual plant first accurately described in the excellent Transactions of the Linnæan society, vol. I. p. 251. it is a very free feeding plant; and although an annual, I have struck it repeatedly from cuttings with the greatest facility.

CHAPTER XI.

YOUNG, REGULAR AND MODERATE SIZED MESEMBRYANTHEMA, MAKE A BETTER APPEARANCE THAN OLD IRREGULAR PLANTS. — SUPPOSED TO THRIVE BEST WHEN PLACED TOGETHER IN NUMBERS, AND UNMIXED WITH OTHER PLANTS.—REASONS FOR SUCH SUPPOSITIONS.

SMALL young MESEMBRYANTHEMA make a better and more regular appearance than old rambling plants, so they should occasionally be renewed from cuttings, or feed as above directed; and when they are in the open air in the Summer season they should not be permitted to root through their pots, which they are apt to do, and which causes them to grow very luxuriant and irregular, their straggling branches should be pruned away occasionally, for they look best when their shoots are kept snug and neat, and have a much finer effect when arranged all together than when they are intermixed with other plants; nay, I am inclined to think they even thrive better when kept all together, than when dispersed amongst a collection of plants, particularly when kept in the house, and for two reasons, the first perhaps more substantial than the last.

THE first is, the moist and heterogeneous air, that abundantly evaporates from the leaves of plants

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confined

confined in a conservatory, is doubtless in part absorbed by the succulent MESEMBRYANTHEMA adjoining them, to their great prejudice.

THE second reason is founded on the nature of the absorbent vessels of all succulent plants, whose offices are doubtless to extract and absorb from the air surrounding them, such of its humid particles coming within the sphere of their attraction, as are most nutritious, congenial, and best adapted to their natures.

It should therefore seem that the air of a conservatory vitiated by the vegetation of a variety of plants, should abound less with such pure nutritious and congenial particles, than one which had only succulent plants placed in it.

AND it should also seem, that such attracted particles should be drawn or carried to the source of that attraction, (that is, to the attracting power,) in proportion to the sum or force of that power, and therefore one hundred Mesembryanthema are capable of causing a greater stream or flow of this nutritive and congenial medium, than one plant is capable of causing, whence it should appear that succulent plants, especially those of the same genus, ought to succeed best when placed together in numbers.

At all events, they are most conveniently supplied with the quantity of water necessary for each, when
placed

placed together, for when they are intermixed with other plants, they are too frequently overwatered to their great injury.—They also afford a better opportunity for the owner and his friends to contemplate their differences and great variety (when growing together,) by contrasting them with each other.

CHAPTER XII.

REMARKS ON THE NATURE OF ROOTING PLANTS, PARTICULARLY SUCCULENT ONES FROM CUTTINGS, WITH AN ACCOUNT OF SOME OF THOSE WHICH STRIKE ROOT THE SOONEST, AND FROM THE SMALLEST SLIPS OR PORTIONS, SEVERAL OF THEM FROM LEAVES ONLY, SO STRONGLY ARE THEY ENDOWED WITH THE PRINCIPLES OF LIFE!

I SHALL next make a few remarks concerning the striking of plants in general, but more especially succulent ones from cuttings; then treat about the divisions of the genus MESEMBRYANTHEMUM into different sections, and give reasons for establishing my own; and then conclude this first part of my observations, and begin that which distinguishes the species.

THE more lax and less firm the shoots or branches of any perennial plant are, the more easily may that plant be propagated from cuttings. This I have found a maxim that admits of few exceptions.

HENCE it is we find almost all the species of the genus MESEMBRYANTHEMUM so readily encreased this way, and agreeable to the maxim we also find the soft succulent species root much freer than the hard and more ligneous kinds: and that the youngest and therefore softest shoots of any woodier sort strike much sooner than the old and firm branches of the same plant.

AND

AND the same observation holds good when applied to any other succulent plants, as Aloes, Euphorbiæ, and Cacti, Crassulæ, and the rest of the order Sempervivæ, of Jussieu's excellent Natural Orders.

So that one would be inclined to suppose that stronger principles of life existed in succulent plants than in ligneous ones ; and that in almost all plants, those principles determined themselves very powerfully to the extremities.

For so strong is the principle of life in the extreme parts of some succulent plants, that their very leaves, when committed to the ground (in a warmth of air proportioned to the climates they belong to) strike root, and become new plants.

THIS is particularly observable in the opuntian division of the genus Cactus, (whose apparent leaves are analogous to shoots) in several species of Aloe ; in many Crassulæ, and in most of the species of Cotyledon ; and I have often practised it on one species of Sedum, and that Sedum is a British plant, and perhaps the only one our island can boast, that is endowed with such extraordinary powers of life ; at least, it is the only one I can at present call to mind. The Sedum I speak of, is the Sedum dasyphyllum, so charmingly figured in the Flora Londinensis, Fasciculus 3. t. 25 ; perhaps, Sedum album, if properly tried, might be found to possess similar powers.

NOR are our gardens destitute of a MESEMBRYANTHEMUM that is capable of being raised and increased this way; for I have seen *M. felinum* (cat chop) struck from a single leaf.

BUT I know of no other species that admits of propagation this way, (although some of the large leaved ones may) and I have repeatedly put a good many of the sorts to the trial.

A SINGLE joint of *M. edule* will strike very well, although treated in the most careless manner, whether kept extremely dry, or planted as soon as cut from its parent, in a pot of wet earth.

IN both ways, I have seen it repeatedly rooted, but a moderate moisture is doubtless the best.

I ONCE knew *edule* root from such a cutting as the above, although deprived of one of the two leaves it consisted of.

M. CRASSIFOLIUM, and many other species, particularly the reptant and procumbent ones, may be struck from the extreme shoots, although they have only two leaves, which, in fact, is no more than a joint, for I have seen them struck repeatedly from such small pieces, at almost all seasons of the year, in a stove.

M. ALBIDUM, although a very succulent, and almost stemless plant, (and sure to strike at last) is

as long a time in striking root from a cutting, as most MESEMBRYANTHEMA, especially if taken from an old plant; but if *albium* is attentively observed, its flesh, &c. is found to be of a very firm texture for a succulent plant, which possibly occasions its tardiness in rooting from a cutting.

WHERE is there a MESEMBRYANTHEMUM of a more lax texture, and succulent nature, than that fine sort, *M. scalpatrum*? and what sorts (except the reptant ones) strike so readily from cuttings?

CHAPTER XIII.

SUCCULENT PLANTS STRIKE ROOT FROM CUTTINGS MUCH SOONER AND BETTER THAN WOODY ONES.—THE NATURE OF ROOTS AND FIBRES, CONSIDERED AND EXPLAINED.—REASONS WHY SUCCULENT PLANTS ARE EASIER PROPAGATED FROM CUTTINGS THAN WOODY PLANTS.—FLOWERING BRANCHES OF ALL PLANTS DIFFICULT TO STRIKE FROM CUTTINGS.—ALL PLANTS WEAKENED BY FLOWERING AND PRODUCING SEED.—CAUSES OF SUCH ENERVATION.—NUMEROUS OTHER REMARKS.

WHY vegetable nature should thus permit her succulent subjects to be increased more readily from cuttings, than her woodier, and far more numerous tribes, I am extremely at a loss to explain.

BUT difficulties do not damp the pursuits of the true naturalist; they rather have a tendency to double his diligence, that by persevering, he may surmount and conquer them, and then enjoy that pleasure in reality, which before, he had only experienced by anticipation.

Roots, which by some authors have been ingeniously considered as branches underground, appear on their first issuing from a cutting, to be a sort of ramification, either of that solid inner part of plants, which

which encircles and protects their pith or marrow, or of the medullary part itself.

RADICLES appear able to protude themselves more easily, and ramify themselves more readily, through the soft substance of a succulent plant, than through the ligneous texture of a dry and firm one.

HENCE I have been almost tempted to admit, that the rooting, or as the Gardeners term it, the striking of cuttings, might be accounted for, upon something like an innate, or latent propensity in vegetative nature, to ramify as much as possible those inner, or medullary parts of her wounded subjects, lest from any casual failure of their other renovating powers, their numbers should decrease; and as this acting principle may be supposed constantly operating, and perhaps nearly equal in all wounded or cut plants, its effects ought also to be nearly equal; and all plants, (except such annual, and others as are remarkable for an uncommon profusion of seed, which generally disables them from furnishing a plentiful increase any other way, by attracting the chief flow of the vital principle upwards to the fruit, and consequently impoverishing every other part), ought to strike root from cuttings, nearly in a similar portion of time, (under similar treatment) and in all probability, a majority of them would do so, if many counteracting causes were not constantly opposing them; the chief of which causes have sometimes appeared to me, no other than the innumerably different

ferent degrees of firmness prevailing in the structure of different vegetables; so great is this diversity, that scarcely two plants are to be found, whose component parts are of equal density; nay, the different parts of the same individual plant vary extremely in this particular, which is doubtless the reason why some parts of a plant are preferable to others for the purpose of propagation by cuttings; and the young lax parts are of course the parts most desirable to select, because they are more succulent, and consequently more replete with the principles of life, than the woodier and firmer parts.

THERE are many other causes which make against the rooting of plants from cuttings, in addition to their different densities, which may be divided into two principal double heads; viz. warmth and humidity, and the natural duration and fecundity of plants, of each of which I will treat separately.

AND all the counteracting causes which arise from those divisions (some or other of which are constantly militating against the supposed propensity in nature to multiply her mutilated subjects by their separated shoots) must be counterbalanced and done away by the artificial assistance of the skilful Horticulturist, before a single cutting can be struck.

BUT first of warmth and moisture, no plant can be struck from cuttings, without the air of the
place

place they are planted in is of a temperature somewhat congenial to their own natural climate, for the wounds of a cutting cause their medullary and most tender parts to be as much exposed to the action of the air as their ligneous parts; if an air too cold acts upon them, they perish that way; if an air too moist, they suffer by imbibing too much humidity, and rot or mortify at the wounded parts, which of course are the tenderest; and if an air too warm is admitted to them, they surely suffer from too great a relaxation, for a warm air causes them to perspire very freely, at the very time when they are the least capable of supporting a perspiration; therefore, all those things must be avoided as much as possible, and as cold an air given as is consistent with safety, for cold air will brace and prevent the cuttings from wasting the little stock of vital strength they have, (by ill-timed evaporation) which they must make the best of, to furnish roots; a close air is better than an exposed one, that is, cuttings, except of succulent plants of every kind, (which do not require it) are better covered with a dry bell glass, than exposed to the action of the outward air and winds, which waste and evaporate their vital fluids: the sun, for the same reason, must not be admitted to shine upon them in their early stages; moisture they must have given, if they want it, but too much will surely rot their wounds, although in a promising state; and too little will as surely destroy them through the other extreme, by wasting their stock of vital fluids. On the proper supply of water and warmth therefore
greatly

greatly depends the hopes the Gardener has of his cuttings, and he ought to regulate it, (as well as the closeness of his glasses), partly by the nature of the plants he wishes to strike; partly by the season of the year, (but Spring is the best;) partly by the presence or absence of the sun's rays upon his cuttings, or the glass they are protected by; and partly by the degree of bottom or hot-bed warmth he supplies them with, if they are tender things. Hardyish and hardy things are perhaps struck best, at least the surest, in the shade, without bottom heat, as is seen in numerous instances by every Gardener.

THE covering of a glass seems serviceable to woody plants, by preventing the action of the outward air upon the cuttings, which of course would flag them; it receives in the day the rising dew dissolved in air, and in the night condenses it into small irregular drops, which either adhere to its sides, or fall in pearly points upon the young cuttings, to their infinite service and refreshment.

ONE point material to be attended to in the rooting of cuttings, and on which their welfare greatly depends, I have omitted to mention—I mean the preparation of soils used for planting cuttings.

THAT soil which is the best for succulent cuttings, is a light unmanured sandy soil, that will neither bind nor retain moisture long; some think it much
mended

mended by a small quantity of sawdust, which not only lightens it, but absorbs any superfluous humidity, which, by loitering about the cuttings, might rot them. Others recommend a small quantity of broken garden pots, broken pretty small, to answer the same end, and of this number I reckon myself; I was first led to it by observing that all plants, and more especially succulent ones, not only rooted sooner when in contact with the side of their pot, than when placed in its center, but ramified themselves along the side for some time, until they had acquired strength to extend their fibres into the little world of earth about them. Cuttings, rooted in the center of a pot, direct their fibres horizontally until they reach the sides, close along which their roots greedily extend, and desert the central mould, which is probably liable to greater extremes of wet and drought, than the favourite pieces and sides of pots, their radicles are so much enamoured of.

For when a pot of cuttings is in want of water, it is of course drier than it ought to be; and as soon as watered, it is also of course somewhat wetter than is absolutely necessary to the welfare of the cuttings, especially in the centre.

WHEREAS the nature of the inner side or superficies of a garden-pot, filled with mould, and planted with cuttings, cautiously watered, has a very gradual tendency to absorb as much humidity as renders

ders it cool and moist, but never wet, which is probably the reason why the radicles of plants prefer being in contact with it, to being in the center of the earth it is filled with, which as just noticed, is subject to greater extremes of moisture and drought, besides, any superfluous humidity loitering about the wounds of the cuttings themselves, is much more easily dissipated, or attracted by the absorbing nature of the pot, than by the earth in its center.

SOME think the properest earth for woody cuttings is a lightish loam, that will close pretty tight, but not bind about them, which of course will retain moisture longer than a light sandy soil, or than that kind of soil which Heaths prefer; and the less cuttings have occasion for water after they are planted, the better; and the closer woody plants bear covering with glasses the better, which they cannot do, if too often watered: for water, although it keeps their leaves green, has at the same time a wonderful tendency to rot their wounds.

SOME have written expressly upon this part of the subject, and asserted that they have found a certain specific, so powerful as to preserve the wounds of cuttings so well, as to enable branches, with only a bud, to take root; and this specific, which had the misfortune to be forgot almost as soon as known, was some kind of a wash or varnish, done over the wounded part of a cutting, for the only purpose of *excluding* the outward air, and consequently moisture, which,

which, if it did, would go well nigh keeping imprisoned the very radicles that cuttings are so much wanted to protrude—but to return,

THE natural duration or fecundity of plants are circumstances very greatly dependant on the different determinations of their vital powers, which are usually called saps.

SOME plants determine all their choicest juices to the seeds, which they perfect in such quantities as entirely exhaust them, they are therefore annual or biennial plants.

OTHERS determine their most vigorous juices towards the roots and lower parts, these are the powerful creeping rooted plants, which are rarely remarkable for seed, nor is it necessary they should, for was it so, their numbers would exterminate more useful things; therefore nature ever wise, never lavish of her choicest gifts, denies much seed to creeping plants.

OTHERS dispose their vital juices in regular order through all their parts, and these are the arborescent and perennial herbaceous plants, that form the bulk of the vegetable world.

A PROPER consideration of these things appears to throw a great light upon the probability of rooting any particular plant from cuttings.

To

To JUDGE rightly of this, we must recollect that a cutting properly treated, roots in a time proportioned to the quantity of vital strength it contains in the smallest bulk, and the degree of resistance its earliest radicles meet with from the hardness of its outer parts.

ANNUAL plants have the most life in those shoots which have not exhausted themselves by flowering, therefore if they are ever to be struck from cuttings, it must be previous to flowering.

ALL creeping rooted plants strike well from their lower parts, because they abound in vital sap.

AND arborecent and herbaceous plants, not remarkable for powerful roots, strike best from the young shoots, because they abound most in the principles of life, and because their tenderer barks make less resistance to the careful tendency nature acting in them has to protrude radicles, from their wounded parts.

NUMEROUS remarks corroborating this doctrine might be adduced, but they would swell a set of "observations on MESEMBRYANTHEMA," already too tedious, to an immoderate length.—I will only mention a few.

THE shoots of most biennial plants may be struck before they have determined their vital powers to the formation of flowers, but rarely after,
when

when those powers, which should have constructed roots and protruded them, have been exhausted in the formation of flowers.

So great is nature's tendency to multiply some things this way, (i. e. from feed,) that cuttings planted with flower buds on them will live while they have expanded them and then die, perhaps after having perfected, even in that state, a little feed, after which they rarely live, for this reason the skilful Gardener deprives his cuttings of all flower buds, and when he can, selects such branches as are destitute of flowers, and at that season of the year when the parent plant is not exhausted by blooming, —wallflowers, (*Cheiranthus cheiri*, a biennial and a British plant,) are usually struck from slips just after the flowering season,—but they strike much better in the Autumn when they have recovered from the weakness occasioned by the production of flowers,—nineteen cuttings in twenty will strike if planted at the foot of a wall after the earth is thoroughly saturated with autumnal rains, without any further trouble or protection, and resist the cold of a severe Winter.

ALL plants, all parts or shoots of plants, nay the individuals of the animal world itself, are materially stronger, after having rested or abstained awhile from the mysterious and enervating processes of reproduction, than they are immediately subsequent to them.

THERE is an observation in some of the writings of the great Linnæus, that annual plants (which I have said determine all their vital powers to the seed,) will often stand the rigours of a Winter, if they come up too late for flowering in the Autumn, but if they flower before that season, they surely die, and this is seen by every Gardener.

SOME annuals and biennials if much stunted by growing on a dry wall, will often survive two or more Winters, because in such situations, they providently reserve a share of their scanty vital sap to form side shoots, and do not determine it bodily to the flowers, and those side shoots being extremely short, and flow of growth, are succeeded by others before they perish by feeding,—and in this way the herb continues much longer than it could do in any other soil.

CHAPTER XIV.

HOW MESEMBRYANTHEMA ARE DISPOSED IN THE
 NATURAL ORDERS OF LINNÆUS AND JUSSIEU.
 —AN ACCOUNT OF THE DIVISION OF THE GENUS
 INTO SECTIONS BY LINNÆUS.—THE AUTHOR'S
 DISLIKE TO IT.—REASONS FOR SUCH DISLIKE.—
 CONSTRUCTION OF THREE NEW METHODS OF DI-
 VIDING THE GENUS INTO CONVENIENT SECTIONS.
 —THE LAST OF WHICH IS ONLY SUFFICIENTLY
 ABSOLUTE TO BE USED.—REASONS FOR REJECT-
 ING THE TWO FIRST AND PREFERRING THE
 THIRD.

IN Linnæus's fragments of natural orders of plants
 (as he thought proper to call them,) the genus
 MESEMBRYANTHEMUM is arranged under his thir-
 teenth order, denominated "Succulentæ," (succu-
 lent,) along with Cactus, Saxifraga, and many
 others, which Mr. de Jussieu, in his excellent na-
 tural orders has thought proper to separate from
 MESEMBRYANTHEMUM.

THE order in which he places MESEMBRYAN-
 THEMUM, he calls Ficoideæ, it forms two divisions,
 the second of which consists of two genera only, viz.
 Mesembryanthemum and Tetragonia, which seems
 the only genus that discerning author has thought
 MESEMBRYANTHEMUM closely allied to—so unlike
 those of other plants are its characters!

As MESEMBRYANTHEMA form an exceedingly numerous family of plants, and require divisions and subdivisions to render the investigation of the species certain and easy, they have accordingly been divided into different sections or groups by Linnæus and others; but as those divisions have appeared to me in one respect or other incapable of answering the purposes intended in so compleat a manner as I could wish, that is, inclusively and exclusively, by *including absolutely*, all the species arranged under them, and by as *absolutely, excluding* all others; I have ventured to lay them aside, and attempted to construct others, upon new principles; drawn entirely from actual observation and a comparison of the living plants with each other, which I humbly trust will at once bear the test of examination, be more agreeable to nature, and more useful in facilitating the investigation of the different species, than those however excellent, which are already in use. They were first formed for my own private service, and rendered me much pleasure before I thought of their publication.

BEFORE I make mention of my own divisions, I will point out some of the imperfections of those used by Linnæus for the genus MESEMBRYANTHEMUM, which are triple, and depend upon the colour of the corolla, * viz. “*albis corollis*” (white flowered,) “*rubicundis corollis*” (reddish flowered,) and “*luteis corollis*,” (yellow flowered.)

* Spec. Pl. ed. 1764. p. 687 to 695.

To these three divisions Mr. Aiton in his * *Hortus Kewensis* added a fourth, viz. "vividibus corollis," (green flowered.)

AND Professor Gmelin in his enlarged edition of the *Systema Naturæ* of Linnæus † lately published, arranges one species (*M. capillare*,) under a fifth division, viz. "incertæ tribus" (of uncertain tribes.)

LINNÆUS in his own immortal *species plantarum*, ‡ also tells us that MESEMBRYANTHEMA admit of being divided into sections after the two following ways, which however, he never adopted,—

FIRST INTO,

"ANNUA, nodiflorum, copticum cristallinum."

"ACAULIA, ringens, bellidiflorum, lingueforme,
"albidum, rostratum, calamiforme, difforme dola-
"briforme."

"LAXA CAULE PENDULO: tripolium, tortuosum,
"expansum, loreum, corniculatum, acinaciforme,
"edule, forficatum, filamentosum, crassifolium, te-
"nuifolium, pomeridianum."

* Vol. ii. p. 296. † Tom. ii. p. 848. ‡ Page 700, note.

“ FURFICOSA caule lignoso duræ, reliqua, 4, 5,
“ 6, 7, 11, 12, 13, 14, 15, 16, 17, 18, 19, 21, 23,
“ 24, 30, 31, 32, 34, 35, 45.”

THE SECOND divides some of them into,

“ ALTERNIFOLIA: nodiflorum, chrystalinum,
“ tripolium, pugioniforme.”

“ LATIFOLIA chrystallinum, tripolium, expan-
“ sum, tortuosum, pomeridianum.”

“ TETRAGYNA geniculiflorum, noctiflorum, tor-
“ tuosum.”

“ DECAGYNA, lingueforme, pomeridianum, pu-
“ gioniforme.”

SUCH are the methods hitherto pointed out for dividing the numerous species of MESEMBRYANTHEMUM into convenient and natural sections.

THE first and I may say the only one which has been used in common, is that regulated by the colour of the corolla. The divisions of it at the time Linnæus formed them were nearly absolute, but not entirely so, (which ought to be the case with all primary divisions,) for he has his *M. noctiflorum flore phæniceo*, and *M. noctiflorum flore stramineo*, not only under the same section, but under the same species,—*tortuosum* & *expansum* he arranges with
the

the yellow flowered species, which Mr. Aiton and professor Gmelin have added to the white, so vague are the colours of the two last mentioned plants, they fall under neither the white nor yellow section; they are in truth between both.

MR. AITON places *M. echinatum album* (white echinated,) and *M. echinatum luteum* (yellow echinated,) both under the section called "*luteis corollis.*"

THE harshness of these incongruities, although extremely trifling, it is my wish to avoid.

MORE instances might be adduced if either necessity or occasion required them.

As to the other divisions pointed out by Linnæus and mentioned above, but which he did not make use of, they must remain as they were, for as they never were followed, there is no necessity to comment upon them.

I now come to speak of my own methods of dividing the very numerous species of *MESEMBRYANTHEMUM* into natural and convenient sections,

By three ways, three new ways, each of which possess three primary sections, I have attempted to do this; the last of which is the one the numerous plants described in these observations, are regulated and divided by,

THE FIRST WAY was into such as had

- I. ALTERNATE LEAVES.
- II. OPPOSITE, DISTINCT LEAVES.
- III. CONNATE, VAGINATE, OR PERFOLIATE LEAVES.

THE SECOND WAY was into such as were

- I. REPTANT.
- II. PROCUMBENT, OR DECUMBENT.
- III. UPRIGHT.

THE THIRD AND LAST WAY is an obvious and an easy one: it is the way which the numerous plants described in these observations, are regulated and divided by, and, like the others, consists of three primary divisions, to which, however, I was obliged to add a sort of supplementary one, viz. "INCERTÆ TRIBUS."

THE primary divisions of this third way are into such as have

- I. ANNUAL ROOTS (ANNUA.)
- II. BIENNIAL ROOTS (BIENNIA.)
- III. PERENNIAL ROOTS (PERENNIA.)
- IV. INCERTÆ TRIBUS (OF UNCERTAIN TRIBES.)

THE LAST DIVISION I have already said, I was obliged to add to the other three, which are natural and easy; and I should have rendered it (the last) useless, if I had ever possessed the opportunity of examining the plants placed under it, by reducing them to one of

of the three former sections, but perhaps chiefly to the third; nor can I avoid adding many of the plants it consists of, have lately been, and perhaps yet are, cultivated by Mr. Lee, of Hammersmith.

THE third section I found pretty aptly divided itself into five convenient subdivisions, viz. into

I. PERENNIA SUBAPHYLLA.

II. PERENNIA SUBACaulia FOLIOSA.

III. PERENNIA CAULESCENTIA FOLIIS PLANIS.

IV. PERENNIA SUFFRUTESCENTIA FOLIIS SUBTUS ROTUNDATIS.

V. PERENNIA SUFFRUTESCENTIA FOLIIS TRIQUETRIS.

I FOUND the first of my three methods of dividing MESEMBRYANTHEMA into sections incapable of answering my purpose so strictly as I wished, particularly in the third division, called

“CONNATE VAGINATE, OR PERFOLIATE LEAV'D.”

I FOUND no end to the character; almost all MESEMBRYANTHEMA have it in a greater or a less degree, therefore I laid it aside, and built my second method, which had the misfortune to please me no better than the first. Its failure, like the first, too, I fancied to be in its third section, called

“UPRIGHT.”

FOR I found it included the stemless species, as well as the upright shrubby ones.

INDEED,

INDEED, I might have amended it in this particular, by adding another section to it, for the stemless forts, but I did not like its first division, "reptant," for it is rendered inabsolute and uncertain, by *M. hispidum* (hispid) which, if planted in the open air, not only trails, but throws out radicles from many of its joints, but when kept in a pot, it is nearly upright, and has not the least propensity to emit roots from the joints.

WHAT I wanted, was a set of primary divisions at once absolute and natural, those I much sought for, by viewing and contrasting the living plants in large groups, and was at length fortunate enough to hit upon those I have adopted, which, however, in a few instances, (which affect the *subdivisions* only) are not, I am afraid, altogether so positive as I could wish, that is, a few of the plants arranged under the subdivisions

IV. SUFFRUTESCENTIA FOLIIS SUBTUS ROTUNDATIS; and

V. SUFFRUTESCENTIA FOLIIS SUBTUS TRIQUETRIS do not fall under them so absolutely and distinctly as I endeavoured to make them; for the rounded convexity of the keel angles (which, perhaps, would have been better expressed by the words, *foliis subtus convexis*, than by the term, "*foliis subtus rotundatis*,") is a circumstance that, in a few instances, approaches the characters of the subdivision

" FOLIIS SUBTUS TRIQUETRIS," from the rounded keel part of the leaves assuming

too abrupt a degree of convexity, in which case, any leaf, especially towards the apex, puts on an appearance approaching very nearly to *subtriquetrous*.

MY DIVISIONS and SUBDIVISIONS, however, upon the whole, are more positive, than any I have yet seen; the primary sections are absolutely so; but the last "Perennia" would not have been certain without joining in it, the stemless, with the caulescent shrubby species, a junction that few would have formed. This I was obliged to do, for I found the stemless species were, in fact, of an undershrubby nature, and acquired by age considerable stems, as I have frequently perceived in aged plants of *M. subulatoïdes*, (awld-like) *M. calamiforme*, (quill-formed) *M. bellidiflorum*, (daisy-flowered) *M. albidum*, (white) *M. caninum*, (dog chap) *M. murinum*, (mouse chap) *M. dolabriforme*, (hatchet leaved) *M. difforme*, (deformed) and others.

CHAPTER XV.

APPLICABLE SPECIFIC NAMES FOR MANY NEW PLANTS, IN ANY GENUS ALREADY SUCCULENT AND EXTENSIVE, DIFFICULT TO CONSTRUCT—CONCISE ACCOUNT AND VIEW OF THE NUMBERS OF MESEMBRYANTHEMA DESCRIBED BY THE MOST EMINENT OF THOSE WHO HAVE WROTE ON THIS SUBJECT, FROM THE DAYS OF BRADLEY TO THOSE OF LINNÆUS.—SLIGHT ENUMERATION OF THE SPECIES DESCRIBED IN THESE OBSERVATIONS, AND OTHER PARTICULARS.

THE names I have thought proper to distinguish the new species by, (and those species are pretty numerous,) I humbly trust will be found as applicable as the natural difficulties attending the subject, when properly considered, will be found to admit; but I cannot help fearing, that those ending in *oides*, as *glaucoïdes*, *subulatoides*, &c. will find a more difficult acceptance than any of the rest; and the only things I have to urge in their defence are, that the different plants to which they are applied, presented no other terms to my mind of the smallest aptness, and that I have found them excessively serviceable, in pointing out to me the most difficult plants, in the genus I have engaged to describe.

It is no easy thing to find room for very characteristic epithets for some dozens of new plants, in a genus that is at once completely *succulent* and *extensive*.

SOME

SOME of Mr. Lee's names, I mean the names he sells his plants by, were so obviously inexpressive, that I did not continue them, even to my specimens, before I meditated the construction of these observations.

For instance, the name *succulentum*, (succulent) when all the other species are succulent, and a third of them more so than the plant in question, is surely rendered less obscure and ambiguous by the term, *purpuro-croceum* (from purple to saffron coloured;) for it is a term that at once points the plant out from all the species I have seen flower; I know no other sort, whose flower is at first of the brightest purple, and that quickly fades to a pale saffron. Such is the case with *purpuro-croceum*, which term alone (when the plant blooms) is sufficient to distinguish it from all its congeners I have seen flower.

THE species of MESEMBRYANTHEMUM, which I have enumerated in the following pages, amount to upwards of 130, exclusive of those under the division "*Incertæ tribus*," and all varieties; a number, which few would have supposed to exist in nature, a number, which six months ago, I had not the most distant prospect of contemplating.

I WILL just take a view of the numbers different authors have summed up, and begin with Bradley, who was the first who took any particular care,
(as

(as far as I know at least,) in figuring and describing MESEMBRYANTHEMA.

BRADLEY in his Historia Plantarum succulentarum, published in 1727, describes _____ } (Fifty species, or species he mentions in his planting and gardening. *)

DILLENIUS in his Hortus Elthamensis, published in 1732, describes - } Fifty-five species according to Dr. Pulteney, † and 33 according to Mr. Curtis. ‡

MILLER in his Gardener's Dictionary, Ed. 7. published in 1759, § describes _____ } Forty seven species.

LINNÆUS in Species Plantarum, published in 1764, describes _____ } Forty five species.

THE LITCHFIELD SOCIETY, in their useful translation of the Systema Vegetabilium of Lin. published in 1783, enumerate _____ } Fifty one species.

* Bradley's Planting and Gardening, p. 430, printed in 1724, which is three years before the publication of the last decade.

† Progress of Botany in England, v. ii. p. 172.

‡ I have not got Miller's last and eighth edition, which may perhaps mention more.

§ Bot. Mag. p. 32.

Aiton in his Hortus Kewensis, published in 1789, described 70 species, 21 of which were new } Seventy species.

Gmelin, in the 2d tom. of Syft. Nat. published in 1791, describes } Seventy-two species.

And

THESE OBSERVATIONS enumerate } One hundred and thirty two species.

THE reason why the numbers of Linnæus appear fewer than those of Dillenius and Miller, is, because he reduced a great many of the plants which those two ingenious and practical authors considered as specifically different, to mere varieties.

For my own part, I am sufficiently convinced that most of the leading varieties, both of Species plantarum, and of the Hortus Kewensis, are very distinct species, such for instance as, ringens felinum, (cat chop) barbatum humile majus, (great dwarf bearded) and barbatum humile minus, (lesser dwarf bearded) and detoides dorso non muricato, (smooth keeled delta leaved) and lingueforme latiore, (broad tongue leaved).

I BELIEVE all those to be very distinct plants, particularly the two last mentioned sorts, which I have more than once found come perfectly true in

in every respect, when raised from seeds which had ripened on a shelf that held about 40 species, arranged together.

MR. MILLER, who was 60 years a true *practical* Botanist, and a man of sound judgment, (but his opinions on those points have been too little attended to) ranked the above-mentioned MESEMBRYANTHEMA, as plants specifically different; the two last of which, if I recollect right, he called caulescens (stem growing) and lucidum (shining). The first name I have retained in these observations.

CHAPTER XVI.

REMARKS ON CERTAIN PECULIARITIES OBSERVABLE IN SUCCULENT PLANTS,—A GLAUCOUS COLOUR COMMON,—A GREEN ONE MORE RARE,—SOMETIMES TINGED WITH A PURPLE COLOUR TOWARDS THE EXTREMITIES,—THE CAUSES OF SUCH COLOUR,—OTHER PECULIARITIES OF SUCCULENT PLANTS,—SOME OF THEM CAPABLE OF BEING USEFUL AS ARTICLES OF FOOD, IN MEDICINE, AND PERHAPS THE ARTS,—SUCCULENT PLANTS SEED COMPARATIVELY LITTLE,—OTHER REMARKS.

A FEW more remarks, relative to the peculiarities of MESEMBRYANTHEMA, and other succulent plants, which I have neglected to insert in a more suitable place, I shall beg leave to insert here, they are of a general nature.

A GLAUCOUS white colour, of greater or less density, is the predominant colour of succulent plants, comparatively few are entirely destitute of it.

WHY this colour should prevail so much with them, I am at a loss to surmise, and have, at present, neither leisure nor room for any more conjectural ideas.

BUT there are succulent plants of different shades of green, some of them of the finest and deepest and most lucid tints, as, *M. viride* (green) and all the lingueform species.

G

FEW

FEW succulent plants have coloured leaves, that is, of a red, or purple, or other tinge.

THE leaves and shoots of *Craffulæ*, when pinched by drought or starved with cold, acquire a purplish tinge.

AND some Cotyledons, from the same causes, put on the same appearances.

AND I have seen *MESEMBRYANTHEMUM* acinaciforme, with the leaves beautifully adorned, with a bright purple coloured margin, but it was only the temporary effect of either cold or drought. The young shoots of many species of *MESEMBRYANTHEMUM* sometimes assume a purplish tinge, some forts put on a brownish one, and some for a while a colour inclining to yellow, but such transitory shades arise merely from the effect of an air too cold (especially after having been used to heat) upon the young tender branches, which hardens and possibly contracts their pores or orifices; and causes them to deny absorption to the purple coloured rays of light; but when exposed to warmth again, their pores relax themselves, and drown the purple tinges which were before exhibited on, and reflected from their surfaces.

SUCCULENT plants are very rarely hairy, villose, or pubescent; sometimes echinate and hispid, with minute prickles; frequently more or less spiny, and sometimes

sometimes dreadfully so, often verucose or tuberculated; and in general produce but little seed.

THESE circumstances are observable in *Portulacca pilosa*, (hairy) *Sempervivum villosum*, (villous) *MESEMBRYANTHEMUM*, pubescens, (pubescent) *M. echinatum* (echinated) and *M. hispidum*, (hispid).

THE ALOES are most of them more or less spiny, and many Cacti, dreadfully so, and *MESEMBRYANTHEMUM spinosum*, (spiny) is remarkable for its trichotomous thorns.

THERE are several species of Aloe, which are verucose and tuberculated, and the leaves of *MESEMBRYANTHEMUM tuberculatum*, (tuberculated) of Miller, which is the *rostratum*, (beak'd) of Linnaeus, are tuberculated on the keel, according to Miller's description of that plant.

FEW indeed are the succulent plants which have been used as food for man; but several of them are medicinal, and some afford a kind of thread which has been industriously converted by the natives of America into various useful domestic purposes.

I CAN at present call to mind few truly succulent plants which I have *seen* used in substance as food, except I say *Portulacca oleracea*, (oleraceous) which although fleshy and belonging to a succulent genus of plants, is not sufficiently so, to be called a succulent plant itself; it is used in salads.

THE fruit of various Cacti are esteemed fine, some of them delicious, resembling little pine apples in shape, and are greatly relished in the warm parts of the world.

AND Bromelia ananas, the pine apple itself, that prince of fruits, is a plant of a very succulent nature, as appears from its crown being able to exist without water, and out of the ground above half a year, after it is detached from its parent.

THE fruit of that fine looking plant MESEMBRYANTHEMUM edule is said to be relished by the Hottentots, whence its names, Hottentot Fig, or Fig of the Hottentots, and Ficus Hottentotorum.

IN the travels of Lieut. Paterfon into Africa, we are told that the Hottentots are exceeding fond of some species of Mesembryanthemum as food; but he does not specify the sorts. It is probable some of them might be used as a wholesome salad in this country; the different species affect the organs of taste in a different manner; the juicy thick leaved sorts have a watery herbaceous taste, which appears slightly astringent and cooling; some are rather saline, but not unpleasantly so, as reflexum, of these OBSERVATIONS; and others are harsh, tough, and very astringent, as diversiphyllum, of these OBSERVATIONS.

SOME

SOME species of Aloe, particularly *Aloe fuccotrina** (*fuccotrine*) which Linnæus joins with others as varieties of his *perfoliata* (*perfoliate*) afford the drug known so well by the name of *aloes*; it is the chief of the ingredients of which Anderson's celebrated Scotch Pills are composed.

SEDUM acre, a succulent and a British plant, has also been allowed to possess some medical virtues, and is accordingly figured by Dr. Woodville in the second part of his Medical Botany, Pl. 231.

AND the *Agave Americana*, commonly called the Great American Aloe, has had the fibrils of its leaves manufactured into useful things.

I KNOW of no very succulent plant that feeds abundantly, their principles of life residing too much in the branches and leaves; many sorts only produce flowers at very distant periods of time, which are not always followed by perfect and productive seeds, as several species of *Aloes* and *Agave*; a very few are viviparous, as *Agave vivipara*, and most of them require a length of time to arrive at maturity, when raised from seed; some of the *Aloes* and *Agaves* are so extremely tardy in this respect, as to require from ten to twenty, and in some cases an

* *Aloe perfoliata fuccotrina*, Woodville's Medical Bot. Pl. 202, where the reader will see a full account of the medical and botanical characters of this Aloe.

hundred years, to bring them to maturity from seed ; in this country at least, such is the will of nature ! and such the regulation of her bounds !

IN some of these respects plants bear a distant analogy to the animal world, the individuals of which when prolific, are rarely remarkable for length of life,---and vice versa,---take for example the eagle and the wren ! the elephant and the dog !

ANNUAL plants, as groundsel, seed abundantly, and are of short duration !

TREES, as the oak, seed comparatively little, and endure through the crash of ages !

BUT is it not time to put a finish to these rambling remarks ?

FOR the sole purpose of avoiding at once the impropriety of copying unexamined synonyms, and the mistakes and errors too frequently arising from a hasty or formal examination of the books of a friend ; I have referred the plants described in the succeeding pages, to the works of such authors only, as are in my own possession ; whose synonyms I have examined again and again, and am pretty well convinced of their accuracy.

THIS may depreciate the value of my OBSERVATIONS in the minds of such as like a long chain

chain of synonyms.---To such I would say synonyms are excellent if rightly developed; but far worse than total silence if wrongly applied; and what can I do, who have neither the figures of Bradley nor Dillenius to guide me through the dark. Nor have I one *Botanical* friend to assist me, either in the construction or revision of my style.

THE plants not referred to the *Systema Naturæ* of Linnæus lately published and enlarged by Professor Gmelin, are supposed not to be in it, and consequently new species, except only, MESEMBRYANTHEMUM acinaciforme, (scymetar formed,) and M. aureum, (golden,) which although old plants, by some strange and unaccountable oversight, do not make their appearance, either in Gmel. Syst. Nat. or the *Systema Vegetabilium*, as translated by the Litchfield Society.

SUCH new plants I have marked with an asterisk in the margin, that the eye may be enabled to investigate them with greater facility.

IF any one should meet with a new, an ambiguous, or an uncertain MESEMBRYANTHEMUM, and should be *desirous of knowing*, whether it is described in my OBSERVATIONS, or not, I take the liberty of requesting such an one to transmit me either a specimen, a description, or a drawing of the plant, and he shall immediately be made acquainted with

my best opinion on the subject; such communications would gratify me in the extreme, and shall be thankfully acknowledged, if the Public should ever flatter me, by calling for a second edition of my OBSERVATIONS; an encouragement that might prompt me to extend them to somewhat like a general account of succulent plants.

END OF PART THE FIRST.

OBSERVATIONS

ON THE GENUS
MESEMBRYANTHEMUM,
IN TWO PARTS;

PART THE SECOND.

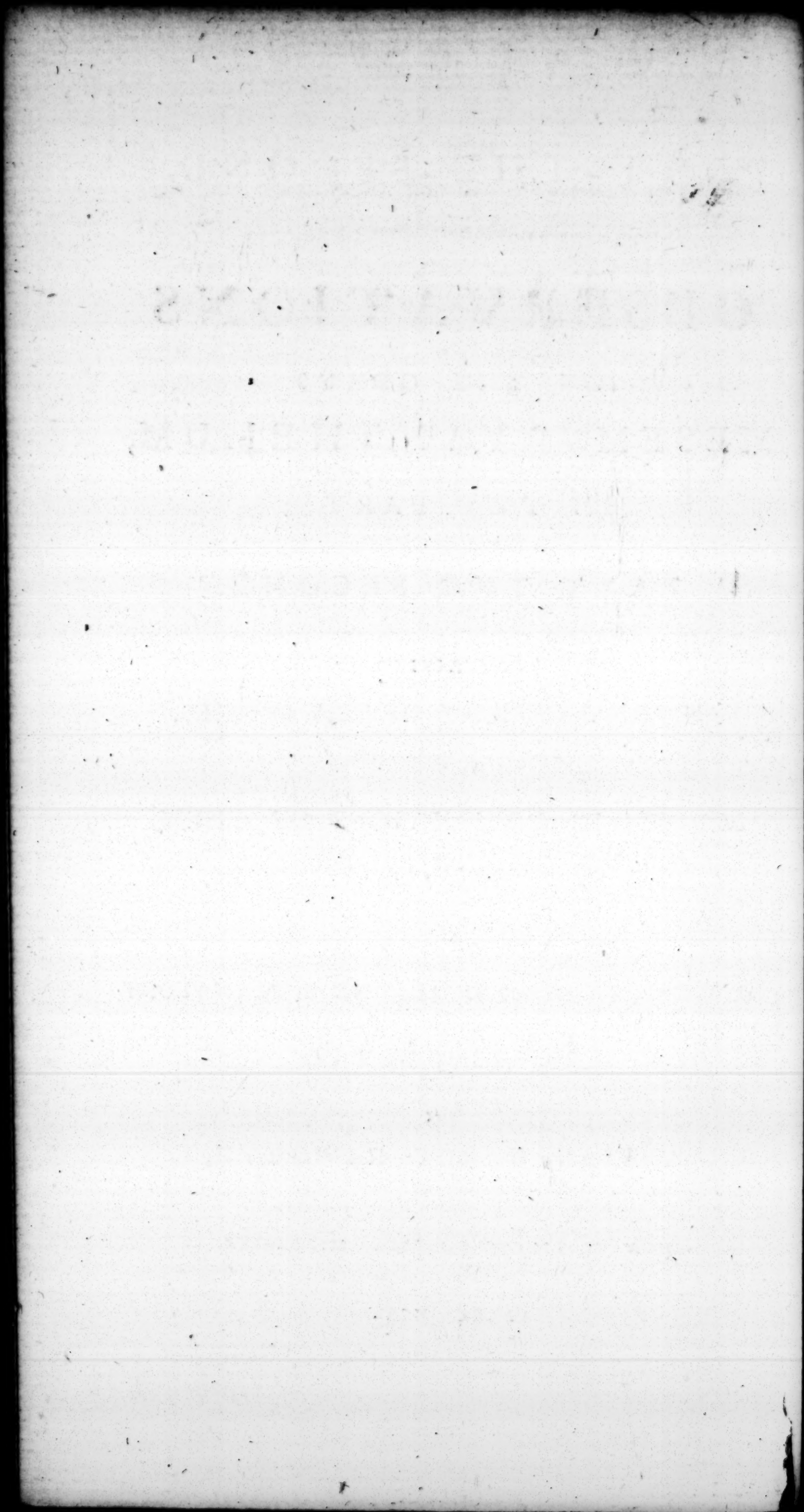
CONTAINING
AN ARRANGEMENT OF THE SPECIES,
AFTER A NEW PLAN,
SCIENTIFIC DESCRIPTIONS OF THEM,
THE SYNONYMA OF AUTHORS,
AND A GREAT VARIETY OF
CRITICAL, PHILOSOPHICAL, AND EXPLANATORY
REMARKS,

BY

ADRIAN HARDY HAWORTH,

LATE OF COTTINGHAM, YORKSHIRE,
NOW OF LITTLE CHELSEA, MIDDLESEX.

M.DCC.XCV.



PART THE SECOND.

CHAPTER I.

CONTAINING AN ACCOUNT OF NEARLY ALL THE DIFFERENT SPECIES AND VARIETIES OF MESEMBRYANTHEMUM I HAVE ANY KNOWLEDGE OF, WITH SCIENTIFIC AND PARTICULAR DESCRIPTIONS OF MOST OF THE SPECIES, AND REFERENCES TO VARIOUS AUTHORS WHO HAVE TREATED ON, AND DESCRIBED THEM,—ALSO THE DIFFERENT DIVISIONS OF THE GENUS INTO CONVENIENT AND NATURAL SECTIONS, AFTER METHODS ENTIRELY NEW,—AND A GREAT VARIETY OF OBSERVATIONS AND REMARKS, CRITICAL, PRACTICAL, PHILOSOPHICAL, AND EXPLANATORY.

MESEMBRYANTHEMUM,

FIG-MARYGOLD.

Gen. Pl. ed. 6. 628.

Fam. Pl. Lich. Soc. 628.

Juss. Genera Pl. 317.

CLASS AND ORDER.

ICOSANDRIA PENTAGYNIA.

NATURAL GENERIC CHARACTER.

CALYX, *perianth* one leaved, five cleft
above, acute, expanding, permanent.

COROLLA, one petaled; *petals* lance-linear, very numerous, growing in a
manyfold

manyfold series, rather longer than the *calyx*, slightly joined in one by the *claws*.

STAMINA, *filaments* numerous, capillary, the length of the *calyx*, *antheræ* incumbent.

PISTILLUM, *germ* beneath, with five obtuse angles, *styles* oftener five, awled, erect, reflected, *stigmata* simple.

PERICARPIUM, *capsule* fleshy, roundish, with a navel marked with rays, *cells* answering the number of *styles*.

SEEDS, very numerous, roundish.

ESSENTIAL GENERIC CHARACTER.

CALYX, five cleft.

PETALS, numerous, linear.

CAPSULE, fleshy beneath, many seeded.

ABBREVIATED GENERIC CHARACTER.

CALYX, above, five cleft.

COROLLA, many cleft.

CAPSULE, fleshy, mostly five celled, many seeded.

THE MESEMBRYANTHEMUM *geniculiflorum*, (joint flowering) *noctiflorum*, (night flowering) and *tortuosum*, (tortuous) are four female.

THE MESEMBRYANTHEMUM *lingueforme* Lin. (tongue form) *pomeridianum*, (afternoon) *pugioniforme*, (dagger
ger

ger form) *barbatum* Lin. (bearded) *acinaciforme*, (scymetar formed) *loreum*, (strap) are ten female.

OBSERVATIONS.

THE trivial name of *Mesembryanthemum acinaciforme*, (scymetar formed) is by mistake spelled *aciniforme*, and translated (berry bearing) by the Botanical Society at Lichfield, in their most useful translation of *Genera Plantarum*. I make mention of the circumstance, merely for the information of such of my readers, as are either unacquainted with the language in which Linnæus wrote his Botanical works, or are as yet too young in the study of this extensive and intricate genus, to detect and see the slightness of the error. To such, the plant might otherwise have appeared as a *baëciferous* species, a peculiarity utterly foreign to the nature of a *Mesembryanthemum*.

LINNÆUS says *Mesembryanthemum barbatum*, (bearded) has ten styles, as noticed above. The specimens I dissected had no more than five. I had only two to dissect.

MESEMBRYANTHEMUM *villosum*, (vil-
lous) has no petals, but the calycine
leaves

embryanthema; that is a task I
fully resign to abler hands; to
may live and flourishing plants
the species in existence, be more
possible than I have hitherto had the
ne to find them! Into such hands
the works of all the authors,
have touched upon the subject,

SPECIES.

leaves are of an unusual texture, acquire a purplish tinge when mature, appear as if they were a calyx and corolla joined in one, and may perhaps in the œconomy of nature sufficiently answer the purposes, and perform the functions of both.

MESEMBRYANTHEMUM tricolorum is remarkable for its polygynous tri-coloured flowers; *M. tuberosum*, for its tuberous root; and *M. spinosum*, for its trichotomous thorns.

AND there are many other Mesembryanthea possessing characters and singularities peculiar to themselves, most of which being noticed under my descriptions of the species they belong, are the less necessary to be enumerated here; particularly when I recollect I am only writing an Essay or OBSERVATIONS on, not an HISTORY* of,

* A COMPLETE History of Mesembryanthea ought to contain,

COMPLETE figures of all the species and principal varieties known,—

COMPLETE scientific descriptions of all their parts,—

ALL their synonyma *rightly applied*.

AN account of their uses, œconomy and peculiarities,—

AND a full relation of every thing worth mentioning, which has been handed down to us by every author who has wrote upon the subject.

Mesem-

Mesembryanthema; that is a task I cheerfully resign to abler hands; to such may live and flourishing plants of all the species in existence, be more accessible than I have hitherto had the fortune to find them! Into such hands may the works of all the authors, who have touched upon the subject, fall!

SPECIES.

S P E C I E S.

* A N N U Æ.

Pinnati-
fidum
(1)

MESEMBRYANTHEMUM foliis pinnatifidis.
Supplementum Plantarum, 260.

Aiton's Hortus Kewensis, vol. ii. p. 193.

Steele's Cat. 106.

Curtis's Magazine, vol. ii. p. 67.

Syst. Vegetab. Litchfield Soc. vol. i. p. 385.

Syst. Nat. Gmelin, tom. ii. p. 847.

Jagged leav'd fig-marygold.

O B S E R V A T I O N S.

ROOT, annual, not much branched, of short duration.

STEMS, branching, coloured, if not over-watered, and trailing upon the ground, covered, as is the whole plant, with beautiful spangling chryselline papillæ.

LEAVES, pinnatifid, of a yellowish green colour, opposite, attenuate at the base.

FLOWERS, small, axillary, solitary, on longish pedunculi, appearing in July and August, of a yellow colour.

CALYX, five, cleft, unequal, segments 3 short, 2 longer and broader than the other three.

COROLLA, *petals* numerous, scarcely equal to the longest segments of the calyx, yellow,

yellow, linear, expanding in the afternoon.

STAMINA, filaments numerous, yellow, supporting yellow *antheræ*.

PISTILLUM, germ, roundish, styles five, stigmata simple.

SEEDS, numerous, small, roundish, and brown, inclosed in an obtusely angled obtruncate capsule.

INTRODUCED according to Ait. Hort. Kew. into this country from the Cape of Good Hope, by Mr. Fr. Masson, in the year 1774.

FLOWERS in July and August; bears forcing, and cannot be made to root from cuttings, which however when planted do not die until they have perfected flowers and ripened seed.

THIS and the following are the only annual species of *Mesembryanthemum*, I ever had the pleasure of seeing alive.

chrys-
tallinum
(2)

MESEMBRYANTHEMUM foliis alternis
ovatis papulosis, floribus sessilibus,
calycibus late ovatis, acutis retusis.

Sp. pl. 1. 688.

Gouan Hort. Monsp. 243.

Aiton's Hort. Kew. v. 2. p. 179.

Steele's Cat. 106.

Hill's Hort. Kew. class 7. p. 154.

Supplem. Plantarum, 259.

Syst. Veg. Litchfield Society, 1. 382.

Syst. Nat. Gmel. tom. ii. 843.

Mesembryanthemum I. Hill's *Gen. Nat. Hist.*

Hill's Eden, 200. pl. 25. fig. 1.

Mesembryanthemum, with oval, obtuse, waved leaves, placed alternately, *Mill. Dic. Ed. 7.*

Diamond Fig-marygold, or ice plant.

Nat. of Greece, near Athens, Ait. H. Kew.

Cultivated in England, 1727, (Ait. H. K.)

Fl. June to September.

OBSERVATIONS.

Root, annual, of very short duration.

STEM, with opposite and alternate cylindrical branches, which when luxuriant trail upon the ground, and are 1 or 2 feet long, when pinched for moisture in a small pot, somewhat ascending, and from 6 to 10 inches long, at all times covered, as is the whole plant, with large and beautiful chryselline papulæ, which, sometimes acquire a purplish tinge on the calyx, at the time the seed ripens.

LEAVES, the first 4 or 6 opposite, each pair crossing the other, very lax and succulent, ovate, undulate, obtuse, attenuate, or wedged at the base, and connate, rather keel'd underneath, especially at the base, with a slight corresponding channel along the center of the upper surface,

face, which is covered with less and duller papulæ than any other part of the plant. Margin regular edged, with globular papulæ, which are less than those on the stems, upper leaves alternate, growing less and less, nearly sessile, small.

FLOWERS, whitish, with a considerable tinge of red, opening in the middle of the day.

PEDUNCULI, extremely short, or none, alternate, arising from the axæ of the upper leaves.

CALYX, 5 cleft, segments unequal, 3 large foliaceous, beset with pilefcent papulæ, and acutely pointed, 2 inner much smaller, frequently coloured with a purplish tinge, acute at the points.

PETALS, numerous, very narrow, blush coloured without, whitish within, making a poor appearance.

FILAMENTS, numerous, whitish.

ANTHERÆ, whitish, yellow.

GERMEN, 5 angled, smooth, with a navel at the top.

STYLES, 5 longish, not straight, white, stigmata, simple.

CAPSULE, smooth, very fleshy, roundish, ficiform, with a navel at the top, frequently purplish, with 5 groov'd angles, and 5 cells.

SEEDS, numerous, pale.

chryst. I THINK I have seen a variety with flowers
album intirely white.

limpidum MESEMBRYANTHEMUM foliis oppositis
(3) spathulatis obtusis scabridis, papulis
oblongis, foliolis calycinis oblongis
obtusis, medio coarctatis.

Aiton's Hort. Kew. 2. 183.

Steele's Cat. 106.

Transparent fig-marygold,

Nat. of the Cape of Good Hope, Mr.

Fr. Masson, Ait. Kew.

Introduced into this country in 1774.

Ait. H. Kew.

Flowers, July. *Ait. Kew.*

OBSERVATIONS.

I HAVE not seen this plant, although I
have frequently sought for it at Kew,
it is one of the numerous species in-
troduced by Mr. Masson in 1774.

PROFESSOR Gmelin, although he has in-
serted most of the new species of the
Hortus Kewensis into his *Syst. Nat.*
has I think omitted to insert the *M.*
limpidum.

sessili- MESEMBRYANTHEMUM foliis planis spa-
florum thulatis, caulibusque papulosis, ramis
(4) divaricatis, floribus sessilibus.

Aiton's Hort. Kew. 2. 193.

Gmelin's

Gmelin's Syst. Nat. tom. 2. 847.

Sessile flowered fig-marygold.

Nat. of the Cape of Good Hope, Mr. Fr.

Masson, Ait. Kew.

Introd. 1774. *Ait. Kew.*

Flowers, July. *Ait. Kew.*

OBSERVATION.

I HAVE not seen the plant.

glabrum (5) MESEMBRYANTHEMUM foliis amplexi-
caulibus distinctis, spathulatis glaber-
rimis, pedunculis longitudine foliorum,
calycibus hæmisphæricis.

Ait. Hort. Kew. 2. 193.

Syst. Nat. Gmel. tom. 2. 847.

Smooth leaved fig-marygold,

Nat. of the Cape of Good Hope, Mr. Fr.

Masson, Ait. Kew.

Introd. 1787. *Ait. Kew.*

Flowers, July. *Ait. Kew.*

OBSERVATION.

I HAVE not seen the plant.

Helian- MESEMBRYANTHEMUM foliis spathulatis
thoides planis lævibus, pedunculis longissimis,
(6) calycibus basi, planis angulatis.

Ait. Hort. Kew. 2. 193.

Syst. Nat. Gmel. tom. 2. 847.

Spatula leav'd. Fig-marygold.

Nat. of the Cape of Good Hope, Mr.
Fr. Masson, Ait. Kew.

Introd. 1774. Ait. Kew.

Flowers July and August. Ait. Kew.

OBSERVATION.

I HAVE not seen the plant.

pomeridi- MESEMBRYANTHEMUM foliis planiusculis
anum lato-lanceolatis levibus subciliatis dis-
(7) tinctis, caule pedunculis, germini-
busque hirtis.

Species Plantarum 1764. 698.

Ait. Hort. Kew. 2. 194.

Syst. Nat. Gmel. Tom. 2. 847.

Great yellow flowered fig-marygold.

Nat. of the Cape of Good Hope, Ait. K.

Introd. 1774, by Mr. Fr. Masson, Ait. K.

Flowers July and August, Ait. K.

OBSERVATIONS.

I HAVE not seen the plant.

LINNÆUS describes it minutely in *Spec.*
Pl. 698.

nodiflo- MESEMBRYANTHEMUM foliis alternis te-
rum retiusculis obtusis basi ciliatis.

(8) *Spec. Plantarum* 1764, p. 687.

Mesembryanthemum 1. Mill. Dic. Ed. 7.

Mesembryanthemum nodiflorum Hill's *Hort.*
Kew. 154.

Mesembry.

Mesembry. 2. Hill's Gen. Nat. Hist. p.
458.

Syst. Veg. Lichfield Society. 1. 382.

Ait. Hort. Kew. 2. 178.

Syst. Nat. Gm. Tom. 2. 843.

Weston's Nurseryman, 1. 167.

Egyptian fig-marygold.

Native of Italy and Egypt. Ait. K.

Cultivated in this country by Mr. Philip
Miller, 1748, Ait. K.

Flowers August. Ait. K.

OBSERVATIONS.

ALL the authors above referred to, except Gmelin, rank this *Mesembryanthemum* as No. 1 of the genus; he makes it the 4th.

I HAVE not seen the plant.

apeta-
lum
(9) *MESEMBRYANTHEMUM* foliis lineari sub-
lanceolatis, subtus muricatis caulibus
prostratis.

Supplementum Pl. 258.

Mesembryanthemum apetalum foliis amplexi-
caulibus distinctis, linearibus supra planis
internodiis longioribus papulosis; papulis
oblongis, floribus pedunculatis, calycibus
quinquifidis, Ait. Hort. Kew. 2. 180.

Syst. Nat. Gm. Tom. 2. 844.

Steel's Cat. 106.

Dwarf spreading fig-marygold.

Nat. of the Cape of Good Hope, Ait. K.

Introd. 1774, by Mr. Fr. Maffon, Ait. K.

Fl. July and Aug. Ait. K.

OBSERVATIONS.

I HAVE never seen this plant.

It is first described in *Supp. Pl. (at large.)*

copti-
cum
(10)

MESEMBRYANTHEMUM foliis, femitere-
tibus papulosis distinctis, floribus sessi-
libus axillaribus, calycibus quinque-
fidis.

Species Pl. 688.

Syst. Nat. Tom. 2. 844.

Syst. Veg. Lichf. Soc. 1. 382.

Weston's Nurseryman, 1. 168.

Weston's Cat. 161.

Coptic fig-marygold.

Nat. of Egypt, sp. pl.

Flowers

OBSERVATIONS.

I HAVE not seen this plant, nor has it (so far as I know) been cultivated in this country.

THERE is a copious description of it in *Species Plantarum.*

It is the last annual I am able to enumerate regularly in my list; I say regularly, for I suspect there are several annual

annual species in my section "incertæ
"tribus."

ALL the above Mesembryanthema, except the last, are Kew Catalogue Plants, (plants of Mr. Aiton's Hort. K.) I have very frequently sought for them in the Botanic Garden there, but never with success; on which account, I am inclined to think no more of them yet exist in this country, than pinnatifidum and chrysellinum.

* * B I E N N I A.

papulo-
fum
(11)

MESEMBRYANTHEMUM foliis oppositis
distinctis, ovato-spathulatis papulis sub-
globosis, calycibus angulatis quinqui-
fidis, ramis angulatis.

Ait. Hort. Kew. 2. 182.

Suppl. Plantarum, 259.

Syst. Veg. Lichf. Soc. 1. 385.

Syst. Nat. Gmelin, Tom. 2. 847.

Angular stalked fig-marygold.

Nat. of the Cape of Good Hope, Ait. K.

Introduct. 1774, Ait. Kew.

Fl. April—Oct. Ait. K.

OBSERVATIONS.

I NEVER saw this plant; Mr. Aiton makes it the first plant of his second section, "rubicundis corollis," but the younger Linnæus, who describes it minutely

minutely in Suppl. Plantarum, says, the flowers are yellow and small.

It approaches pretty near my carneum, and if the leaves of carneum had been the least spathulate, I should have thought them the same.

Tripo-
lium
(12)

MESEMBRYANTHEMUM foliis alternis lanceolatis, planis impunctatis, caulibus laxis simplicibus, calycibus pentagonis.

Species Pl. 1. 690.

Syst. Veg. Lichf. Soc. 1. 383.

Ait. Hort. Kew. 2. 182.

Syst. Nat. Gm. Tom. 2. 843.

Hill's Hort. Kew. 154.

Weston's Nurseryman, 1. 168.

Weston's Cat. 161.

Mesembryanthemum 8. *Mill. Dic. ed.* 7.

Plain leaved fig-marygold.

Nat. of the Cape of Good Hope.

Cult. 1700 in Chelsea Garden, Ait. K.

Fl. June—August, Ait. K.

OBSERVATIONS.

Root, biennial, according to Linnæus and the Hortus Kewensis.

Stems, prostrate, smooth, finally terminating in flowers.

Leaves, frequently opposite, lanceolate, sub-keeled, and somewhat membranaceous towards the base, bearing a distant

tant resemblance to those of *Aster tri-
polium* ; whence, I suppose, Linnæus's
trivial name.

FLOWERS, terminal, usually solitary, sil-
very white, opening in the middle of
the day, and of short duration.

PEDUNCLES, terminating the branches,
sub-five angled, angles originating from
those of the calyx.

CALYX, exceeding large, (as is the case
with all the biennial kinds) acutely
and deeply pentangular, five cleft, seg-
ments, shortish, unequal, two outer
foliaceous, plain and large, three inner,
less, with subulate points, beneath
which is a projecting ridge-like mem-
brane.

PETALS, numerous, silvery white, ex-
tremely narrow or almost capillary, and
not quite so long as the Calyx.

FILAMENTS, extremely slender, white.

ANTHERÆ, small, whitish.

GERMEN, smooth, sharply five angled,
large.

STYLES, five, slender, expanding, stigma-
ta, simple.

CAPSULE, very large, and deeply five an-
gled, five cell'd, very fleshy, flesh ex-
tremely hard and firm, cells very small,
filled with a few large seeds, partitions
whitish.

whitish, resembling (in miniature) the core of an apple.

SEEDS, few, but very large, while yet inclosed in the living capsule, hunch-kidney form, verucose, and of a shining dark brown colour.

WHEN one of them is cut longitudinally, with a sharp pen-knife, it displays to curious and inquiring eyes, the young embryo, or future plant, which is large and green, and shaped somewhat like the half of a parenthesis, or rather the segment of a circle, and extends from the base or thickest end of the seed, close along its hunched or gibbous side, up to its point, which is just perceptibly end nicked, and is, in all probability, afterwards opened forcibly by the expanding efforts of the vegetating embryo or bud, which bud is imbedded in the farinaceous substance that composes the remainder of the seed, and may, while thus circumstanced, be compared, by the assistance of analogy, to the white of an egg's supporting the embryo chick under the shell.

THE bud is not absolutely surrounded by the abovementioned farinaceous substance, but lodged in a cavity or hollow, that extends along the gibbous side of the seed's coat; the upper extremity

tremity of which coat is evidently attenuate or pointed, and marked for about one third its length, with a scarcely perceptible line, where it may possibly divide, after having been committed to the earth, and by expanding each way, disclose the seed leaves of the plant.

THE curious variation in the structure of the seeds of vegetables, is worthy the attention of every natural philosopher, and is capable of throwing considerable light on the generic and other botanical characters of plants, and may, perhaps, at some future period, be more attended to than at present.

cadu-
cum
(13)

MESEMBRYANTHEMUM foliis filiformi-se-
miteretibus distinctis : papulis ovatis :
floribus lateralibus sessilibus ; termi-
nalibus basi foliorum cinctis.

Ait. Hort. Kew. 2. 179.

Syst. Nat. Gmel. Tom. 2. 844.

Small flowered fig-marygold.

Nat. of the Cape of Good Hope, Mr. Fr.
Maffon, Ait. K.

Introduced 1774.

Fl. July and August. Ait. K.

OBSERVATION.

I HAVE never seen this plant.

***PEREN-

*** PERENNIA.

† SUBAPHYLLO.

* mini-
mum
(14)

MESEMBRYANTHEMUM planta carnofa
obconica truncata, maculata, minima,
maculis confluentibus.

Least fig-marygold.

Native

Introduced into England

Flowers

A new species.

OBSERVATIONS.

Root, perennial, consisting of a very few
fibres, which penetrate but a little way
into the ground.

STEM, none, unless you call the whole
plant so, which is marked with several
single and confluent spots, is attenuate
downwards, about half an inch high,
and truncate above, each side rising a
little higher than the middle, causing
it to appear as if transversely chan-
neled; in the center of the channel is
a scarcely perceptible linear aperture,
closed with a few microscopic hairs, or
rather a pubescence, the only use of
which appears to be to keep out in-
truding insects, or too much water,
from entering the heart of the plant.

LEAVES,

LEAVES, none, unless you call the outer side or coat of the plant so, which, in truth, is the only part analogous to leaves; this outer covering, just described under the title "stem," is fleshy when young, and capable of being separated from the parent plant; when old, it withers, and appears to determine its sap to the next or inner coat, which plumpens as the first decays, and finally bursts it asunder—itself hereafter to undergo the same change.

FLOWER, I have not seen in a perfect state; it is solitary, yellow, small, rising just above the central pubescent ciliated aperture of the plant, and opens in the

PEDUNCLE, extremely short.

CALYX, I have not examined.

PETALS, yellow.

minimum **THERE** is a variety of this wonderful little
var. plant, known to some Gardeners by the name of lesser dumplin or dumplin's wife.

ADDITIONAL OBSERVATIONS.

GARDENERS know these strange little plants by the names of greater and lesser dumplin, or dumplin and his wife;

wife, as I have not seen the latter, I say nothing about it; it may possibly be a distinct plant; and is likely to differ in its spots, which are, perhaps, separate, and not confluent.

THE former is truly a curiosity, it can scarcely be said to have a perfect leaf, for, it in a manner consists of a substance, which is analogous to two leaves united; above, it usually (but not *always*) acquires a degree of expansion, which ought rather to be called a ciliated aperture, or nick, barely sufficient to distinguish it from a solid body; from which aperture, a small yellow flower is occasionally protruded, which scarce appears above the truncated surface of the plant. The growth or production of a pair (if so the above-mentioned body may be called) of young leaves, always bursts asunder the old pair, which very soon after wither and dry up, so that the plant has never two pair of living leaves visible at the same time, whence it is enabled to preserve and keep up its obconical form.

THE offsets appear to arise from the side of the plant, or sometimes, though rarely, two are seen bursting from the same body or pair of leaves, at which time

time they (the offsets) resemble the root of a tulip forming two young bulbs, surrounded by the withered coats of the old bulb, and like the offsets of a tulip, appear to form two separate and distinct plants.

- * nuci- MESEMBRYANTHEMUM, planta carnosa,
forme glauca, subsphæroidea, foliis subnullis.
(15) Nuciform fig marygold.
Native of
Introduced into this country
Flowers
A new species.

OBSERVATIONS.

THIS is a very singular plant, it is allied to minimum, and like that species, has no perfect leaves, although when drawn up by warmth, it sometimes acquires two extremely short leaves, conjoined almost to the points, one of which is gibbous, and longer than the other. I have not been able to obtain specimens of it proper for description.

It is very glaucous, appears to offset pretty freely, and soon forms a little family or cluster of separate heads or plants, of various sizes, from that of a

small hazel nut or less, to that of a very large Spanish nut, which the perfect offsets or plants pretty much resemble, in point of shape, on which account I thought the trivial name *nuciforme* a tolerably applicable one.

SOME of the plants are more globular than others, some more sphaeroidal, and some more resembling nuts, from having flattened sides, than others.

I NEVER saw the plant with two perfect coats, or leaves, or leaf sheaths, as they might be called, for the growth of a second pair bursts asunder those which preceded them, which wither away soon after, in which particular the plant agrees with *minimum*.

AT the apex of the plant is a transverse nick or fissure, little more than sufficient to distinguish it from a solid body.

I THINK this fissure is not ciliate, as in *minimum*, but am not quite sure, for I draw this account entirely from what I remember of the plant, which I saw growing about a week ago.

THIS fissure, shallow as it is, or rather the two sides of it, are the parts which answer to the leaves of other *MESEMBRYANTHEMA*, as appears by viewing *M. nuciforme* and *M. testiculare* together,

gether, for if the sides of the fissure of the former were a very little elevated or elongated, they would form leaves very similar, and almost as long, as those of the latter.

I HAVE some distant conjectures that this plant may be the same as that called aggregatum, in my section "incertæ tribus."

FLOWERS, I have not seen.

ADDITIONAL OBSERVATIONS.

UNDER the observations on minimum, I find I have forgot to add that it is the plant which Mr. Lee calls hæmisphæricum, (hæmispheric) a character which I must confess, I have not been able to discover about the plant; but it is a species that admits of great choice of applicable names.

I ONCE thought of calling it truncatum, (lopped or truncated) from its appearing as if cut off at the top; I also thought of naming it turbinatum, (top-shaped) and the term obconicum presented itself to my imagination, all of which I think inexpressive, when compared with minimum, for it is by much the least of the genus I have either seen, or heard of.

*monili-
forme.

(16)

MESEMBRYANTHEMUM caudex, submoniliformis, foliis vix ullis, aut brevissimis, connatis.

Moniliform fig-marygold.

Native

Introduced into this country

Flowers

A new species.

OBSERVATIONS.

I HAVE seen this plant in two collections only, and have not been able to get a specimen proper for description.

STEM, gross, a little branched, and about 4 inches high in the plants I saw; and somewhat moniliform.

LEAVES, scarcely any, sheathing the stem, and persisting upon it after they are withered; they are conjoined almost to the points, after the manner of those of nuciforme, but open a little at the top, where they are rather pointed, and appear like a solid body slightly cleft.

THE protrusive growth of a pair of new leaves rends the old ones, especially above, which soon after wither, and remain sheathing the stem.

THE leaves of all the plants of this sub-division are rather leaf sheaths than leaves,

leaves, but they are closely allied to testiculare, the first plant of the next sub-division, which has something of the same habit of growth, but acquires real, although extremely short fleshy leaves; but rarely, if ever, possesses more than four of them at once, for like the plants of this sub-division, an old pair of its leaves begins to wither as soon as the new pair is formed.

FLOWERS I have not seen,

† † SUBACAULIA FOLIOSA.

testicu- MESEMBRYANTHEMUM foliis quatuor
lare decussatis supra planis.

(17) Ait. Hort. Kew. 2. 181.

Syst. Nat. Gmel. Tom. 2. p. 844.

Short white leaved fig-marygold,

Nat. of the Cape of Good Hope, Mr.

Fr. Maffon. Ait. K.

Introd. 1774. Ait. K.

Flowers

OBSERVATIONS.

Root, fibrous, perennial.

PLANT, stemless, very white and short.

LEAVES, growing four ways, or each pair crossing the other, rarely more than 4 living ones on the same plant at once, and the oldest of those often

of bellis, less plump than the other pair. All
 only to the leaves are connate below, ex-
 tremely short and thick, but much
 thicker at the base than towards their
 blunt points, rounded on the outside,
 flat within.

**filium* MESEMBRYANTHEMUM foliis connatis
 (18) linear-oblongis equalibus brevis ob-
 tusis semiteretibus glaucis.

Cleft leaved fig-marygold.

Native

Flowers

Introduced

OBSERVATIONS.

THIS is a nondescript species, of very
 humble growth, whose flowers I have
 not yet seen, allied to the M. calami-
 forme and testiculare, intermediate,
 but extremely distinct.

DESCRIPTION.

Root, fibrous, perennial.

PLANT, stemless, when young; when
 very old, acquiring a very short weak
 trailing stem.

LEAVES, of a bluish glaucous green co-
 lour, connate at the base, linear, ob-
 long, of equal lengths, rounded under-
 neath, planeish above, at the very
 points

points blunt, but slightly keeled; whilst young, a pair of them at first sight, look as if they had been one solid body or substance, cloven down the middle with a knife, whence the term fissum, cleft.

FLOWERS, I have not seen.

*fissoides MESEMBRYANTHEMUM foliis connatis
(19) lineari-oblongis inequalibus obtusis
semiteretibus, sub-gibbosis.
Gibbous's cloven fig-marygold.

Native

Introduced

Flowers

A new species.

OBSERVATIONS.

PLANT, very much like fissum, but appears distinct; it is only right to say I have seen it but once, (yesterday,) and that I write this description from what I recollect of it.

LEAVES, like those of fissum, but of unequal lengths, that is, in every pair of perfect leaves, one of them is longer than the other, as is seen in gibbosum and perviride, the leaves are likewise less glaucous than those of fissum, being rather of a bluish green, than a glaucous colour.

FLOWERS, I have not seen.

ADDITIONAL OBSERVATIONS.

I HAVE seen this species again, and am convinced it is a very distinct plant.

LEAVES, much less glaucous than those of *fissum*, of unequal lengths, the largest of them frequently gibbous underneath, and slightly attenuate at both ends, *particularly* at the base, which gives them the air of acinaciform leaves.

*perviride MESEMBRYANTHEMUM foliis obtusis in-
(20) equalibus punctatis semiteretibus, extus
convexis, intus plano-concavis.

Small deep green fig-marygold.

Native

Introduced

Flowers

A new species.

OBSERVATIONS.

PLANT of dwarfish growth, stemless when young; when old may possibly acquire a short trailing stem like *fissum*.

LEAVES, about an inch long, when not drawn up weak, connate, punctate, perfect ones unequal, of a deep glossy green colour, semicylindric, or sub-round,

round, or in other words linear-oblong, convex on the outside and plano-concave on the inside, particularly from the middle downwards to the base, with a slight compressure near the points, which are blunt.

FLOWERS I have not seen.

A NEW species resembling fissum, and gibbosum, intermediate, but extremely distinct.

Introduced

Flowers

Native

*gibbosum MESEMBRYANTHEMUM, foliis inequalibus brevis, crassissimis extus gibbosis.

(21)

Small gibbous fig-marygold.

Native

Introduced

Flowers

A new species.

OBSERVATIONS.

ROOT, perennial, fibrous.

PLANT, stemless, of a dullish glaucous green colour.

LEAVES, various, connate, expanding, scarcely two of equal sizes on the whole plant, one of a pair always larger, longer, and more gibbous than the other, few of them more than one
inch

inch long, all of them more or less blunt, compressed, oblique and gibbous
FLOWERS I have not seen.

A NEW species, but known in the nurseries by the name of gibbosum.

*pubescens MESEMBRYANTHEMUM foliis incanis
 (22) connatis inequalibus, sub-pubescentibus, sub-gibbosis apice subtus, subcarinatis.

Pubescent Fig-marygold.

Native

Introduced

Flowers

A new species.

OBSERVATIONS.

Root, fibrous, perennial.

PLANT, stemless, (whilst young at least,) of a hoary colour, and pubescent in the microscope, scarcely so to the naked eye, unless viewed advantageously in a favourable light.

LEAVES, in shape and habit, much resembling those of perviride, but closely covered with the above mentioned hoary pubescence, and somewhat more compressed towards the points, which are rather less blunt, and somewhat sharper keel'd underneath.

A NEW

A NEW species which I have not seen flower, it is an exceedingly different plant from that which is called pubescens at Mr. Lee's. That plant I saw when I was in his ground, it is a shrub, and I am much mistaken if it is any thing else than the *M. molle* of Mr. Aiton's *Hortus Kewensis*, but having no specimen of it, I dare not be positive, particularly when I recollect Mr. Aiton's molle is very little of a pubescent plant, and yet I have seen molle in some stages of growth, almost as much intitled to the name of pubescens as the plant I have just now given that name to.

digita-
tum
(23)

MESEMBRYANTHEMUM subacaule, foliis alternis teretibus obtusis, floribus axillaribus sessilibus.

Ait. Hort. Kew. 2. 181.

Syst. Veg. Nat. Gmel. tom. 2. 843.

Blunt leav'd fig-marygold.

Nat. of the Cape of Good Hope, Mr.

Fr. Massen, Ait. Kew.

Introd. 1775. Ait. Kew.

Flowers.

OBSERVATIONS.

I HAVE not seen this plant, except a white blunt leaved plant at Mr. Lee's was it;

it; which the foreman told me was *M. digitatum*. If the leaves had been described as opposite and semi-round, instead of round, I should have thought either my *fissoides* or *perividum*, the same as *digitatum*.

calami- *MESEMBRYANTHEMUM* foliis sub-tereti-
forme bus, adscendentibus impunctatis, con-
(24) natis, floribus octogynis.

Species pl. 690.

Syst. Veg. Lichf. Soc. 383.

Syst. Nat. Gmel. tom. 2. 844.

Ait. Hort. Kew. 2. 181.

Hill's Hort. Kew. 154.

Weston's Nurseryman, 1. 168.

Weston's Cat. 161.

Steele's Essay, 60.

Mill Dec. ed. 7. *Mesembryanthemum*, 7.

Quill leav'd fig-marygold.

Nat. of the Cape of Good Hope.

Cult. 1717. *Ait. Kew.*

Flowers most of the summer months.

OBSERVATIONS.

FLOWERS, dull whitish, opening in
PEDUNCLE, or rather scapus, short,
solitary, arising from the centre of the
plant.

CALYX,

CALYX, segments unequal.

PETALS, very slender.

STYLES, in the specimen before me, eight.

CAPSULE, globe-pearl shaped, 8 cell'd.

*fubula- MESEMBRYANTHEMUM acaule, foliis
toides fubulatis, apice triquetris, integerrimis.

(25) Intire awl'd leav'd fig-marygold.

Native

Introduced

Flowers

A new species.

OBSERVATIONS.

PLANT, perennial, for several years stemless, acquiring by age a very short stem.

LEAVES, fleshy, (flesh firm,) very intire, punctate, fubulate triquetrous at the points, which in the young perfect leaves terminate in fine recurving white, harmless bristles or hairs, or, at the base the leaves are rounded on the outside, flat on the inside.

THIS is the plant which is called fubulatum at Mr. Lee's.

By the name fubulatum, I naturally suppose they mean Mr. Miller's fubulatum, the next plant I shall describe, which I conceive to be a different plant from this, for Miller expressly describes his plant with fubulate tri-

triquetrous leaves, ferrate on the keel angle, which I find is by no means the case with this plant, in any stage of growth, for I have observed it from one to many years old.

I THINK there is no room for supposing this plant the compactum of the Hortus Kewensis, which I have not yet seen at Kew.

subula- MESEMBRYANTHEMUM acaule, foliis
tum subulatis triquetris, dorso superne
(26) ferratis.

Miller's Gard. Dic. ed. 7. Mesembryanthemum, 10.

Awl'd-leav'd fig-marygold.

Native

Introduced

Flowers

OBSERVATIONS.

I BELIEVE this plant is called subulatum in some edition of the Gardener's Dictionary, I have never seen it, except perchance Mr. Miller intended the same plant which I have named denticulatum below, which I am inclined to think unlikely, for my denticulatum is a very white leaved plant, and Miller takes no notice of his subulatum, being either white or glaucous,

cous, which his usual accuracy would have led him to mention if his plant had been of either of those colours.

He expressly says his plant is stemless, or I should have thought he might have meant either *ferratum*, or my *lacerum*, by his *fubulatum*.

He could not I think intend the same plant as the *compactum* of the Hortus Kewensis, which is I believe an intire leav'd plant, at least we have no reason to think otherwise from Mr. Aiton's description of it, but *compactum* I have not seen.

MR. MILLER is the only author I have had the opportunity of consulting, who describes the *Mesembryanthemum fubulatum*.

bellidi- MESEMBRYANTHEMUM acaule, foliis tri-
florum quetris linearibus impunctatis, apice
striatum trifariam dentatis.

(27) *Species plantarum*. 690.

Syst. Veg. Litchfield Society, v. 1. 383.

Syst. Nat. Gmel. tom. 2. 844.

Ait. Hort. Kew. 2. 183.

Gouan's Hort. Monspes, p. 243. 1762.

Hill's Hort. Kew. 154.

Weston's Nurseryman, 1. 168.

Weston's Catalogue, 161.

Steele's Essay, 60.

Mill.

Mill. Dic. ed. 7. Mesembryanthemum, 9.

Striate daisy flowered fig-marygold.

Introduced

Flowers June to October, or much later.

OBSERVATIONS.

bellidiflo-
rum pur-
pureum.

MR. MILLER says in the place just quoted, that this plant has a *smaller purplish flower*, which is not the case with the *M. bellidiflorum*, seen in almost every collection of plants, which has a fine, by no means small, variegated flower, greatly resembling that of a single garden daisy, or rather that of the *Mesembryanthemum striatum* of these observations, which is the *M. hispidum striatum* of authors.

MILLER copies the specific characters of Linnæus from Hortus Cliffortianus, and refers to Bradley's History of Succulent Plants, where it seems, by Miller's reference, and indeed that of Linnæus, the plant in question is figured. Now, whether Miller had the real bellidiflorum, and had not seen it flower, and so taken the size and colour of the flower from Bradley's, perhaps, uncoloured figure; or, whether he had some variety of it, or other species like it, with a small flower, which he had seen

seen bloom, and taken for bellidiflorum, is the matter to be considered.

PERHAPS he had the same bellidiflorum we have, and had not seen it flower, so had taken the account of the flower from Bradley's figure; or, perhaps, from some account of it in Hortus Cliffortianus, a book I have not had the opportunity of consulting.

PERHAPS he had some variety of bellidiflorum, with a smaller purple flower, which he had taken for Linnæus bellidiflorum.

OR, perhaps, he had a distinct plant, resembling bellidiflorum in its foliage, with a smaller purple flower.

IT is scarce likely that he should have taken the *M. forficatum* of Linnæus, for *M. bellidiflorum*, with a purple flower; for *forficatum* is a caulescent species, acquiring by age short trailing stems; and bellidiflorum, at best, no more than a sub-caulescent plant.

AND yet the idea gains ground apace, when I recollect, that both plants answer most remarkably well to the terms, "foliis triquetris apice trifariam dentatis."

AND that no other *Mesembryanthema* admit the same description, except, perhaps, the four ringent species, viz.

K

caninum,

caninum, felinum, tigrinum, and murinum, of these OBSERVATIONS, all of which have *yellow*, not *purple* flowers.

AND that the flowers of forficatum are purple, and as it were, substriate, (but not near so much so as those of bellidiflorum striatum) and almost exactly resemble those of bellidiflorum, even more so than those of M. striatum of these OBSERVATIONS.

AND the conjecture is further strengthened, when I recollect, that I have found *no* description of M. forficatum, in the 7th ed. of the Gardener's Dictionary, except the above cited one belongs to it.

AT all events our bellidiflorum has a *very fine shewy*, by no means *small*, striated flower.

IN the translation of the Systema Vegetabilium, by the Botanical Society at Lichfield, the trivial name of this Mesembryanthemum is printed bellidifolium, instead of bellidiflorum, a mere error of the press, I suppose, which I mention, lest it should prove a stumbling block to some one, very young in the study of this large genus, the significations of the two terms being so considerably different: one meaning
the

the flower of a daisy; the other the leaf of that plant.

bellidiflo-
rum al-
bum.

GOUAN in the Hortus Regius Monspe-
liensis above quoted, mentions a white
variety of the *M. bellidiflorum*, which
I have never seen.

THE following is a description of *M. bel-
lidiflorum striatum* :

ROOT, perennial, fibrous.

PLANT, for a long time stemless, by age
acquiring a short stem.

LEAVES, green, expanding, triquetrous,
compressed, fleshy and firm, sometimes
intirely destitute of teeth, but the per-
fect ones are generally toothed, three
ways towards the points, which some-
times curve slightly inwards.

FLOWERS, exceedingly like those of a
single red daisy, broader over than a
shilling, when fullest expanded, termi-
nating the stoutest hearts or branches
of the plant, produced on a sort of short
spike, which usually supports two (not
often three) bracteated peduncles,
sometimes only one, in which case, the
spike degenerates into a kind of scapus.
In six specimens before me, the flowers
of four are on the abovementioned kind
of spike, and two on a solitary bracte-
ated scapus.

SPIKE, very short, compressed, with two connate bracteaceous leaves near the base, like the leaves of the plant, but less, and three ways tooth'd, from the centre of which arise the peduncles.

PEDUNCLES, cylindrical, somewhat compressed, with two foliaceous bractæ, near the middle.

BRACTEÆ, two on each peduncle about its middle, foliaceous or like the leaves of the plant, but much less, triangular, compressed, connate, and often three ways tooth'd.

CALYX, five parted, or five leav'd, pentangular, funnel shaped, leaves broad at the base, nearly equal, two rather longer than the other three, much dilated at the base, gradually tapering to a point, slightly keel'd, with a tooth or two on one side near the point, the three other leaves rather shorter, with brownish membranaceous edges, and an acute tooth-like point.

PETALS, numerous, nearly equal, linear-lanced, some intire and blunt, others deeply end nick'd, exactly like the radiating petals of a single garden daisy, of a whitish colour, with a bright purple midrib or keel, extending up to the point outwardly, only half way up inwardly, purple tipped, and edged with
a fine

a fine line of purple down the sides, pleasing to the eye, and expanding only to a warm sun in the forenoon.

FILAMENTS, numerous, papulose, convergingly arched over the styles, purple, of nearly equal lengths.

ANTHERÆ, small purple, pollen purple.

GERM, fleshy, but dryish, bluntly five angled, flattish.

STYLES, five, very short, erectish, green, often tinged, purplish above, rough with shaggy papulose hairs.

CAPSULE, five angled, five cell'd, fleshy, and fig form, but short and ferrate round the base.

SEEDS, numerous, small, lodged in five dry cells.

*denticula- MESEMBRYANTHEMUM foliis connatis intumcanum canescentibus compresso - triquetris,
(28) sub-incurvatis, basi attenuatis, apice subtus denticulatis.

Denticulate hoaryish fig-marygold.

Nat. of the Cape of Good Hope.

Introduced 1793, by Messrs. Grimwood and Co. Nurserymen, Kensington.

Flowers

A new species I believe.

OBSERVATIONS.

PLANT, rather hoary than glaucous, stemless, microscopically pubescent.

LEAVES, connate, in the plants I saw, about two inches long, of a dull whitish colour, or from glaucous to incanefcent; when observed in the microscope very slightly pubescent, rather inclining inwards, compressed triquetrous, somewhat attenuate downwards, where the keel is rounded. When perfect, the under sides of the points are furnished with one or two spinulose denticulations, whence my name.

THE attenuation at the base of the leaf, and its tendency to curve inwards, added to its being compressed-triquestrous upwards, almost tempted me to call it a sub-acinaciform leaf; but the above specific character, will alone (I trust) abundantly distinguish it from all its congeners.

It seems nearest to approach *compactum*, and Miller's *subulatum*.

BUT differs from the former in its denticulate leaves, and from the latter, (I should apprehend) in its hoary colour, which I have before noticed under my remarks on Miller's *subulatum*, to which I request the reader to turn.

MESEMBRYANTHEMUM denticulatum, might have admitted the name pubescens, with somewhat more propriety than the one called so at Mr. Lee's, which,

which, from what I saw of it, I conjecture to be no more than the *M. molle* of the Hort. Kew.

DENTICULATUM is a fine sort, was raised from Cape seed by Messrs. Grimwood and Co. Kensington, and has not yet produced flowers with them.

ADDITIONAL OBSERVATIONS.

SINCE writing the above, I have seen two plants at Kew, extremely like *denticulatum*, if not the very same. They appeared rather to differ from *denticulatum*, and from each other as follows :

dentic. **LEAVES**, more glaucous-white, that is, glaucum less hoary, broader at the points, with from two to three teeth.

Glaucous denticulate fig-marygold.

dent. can- **LEAVES**, exceeding white, looking almost didissimum as if mealy, longish, much compressed at the points, with two, three, or more teeth.

White denticulate fig-marygold.

FURTHER OBSERVATIONS.

BOTH these varieties, if such they really are, had large tumid blisters or pustulations at the inner bases of the leaves,

which I do not recollect in Grimwood's plants.

NOT having in my possession any specimens of the two Kew forts, I am unable to say any thing further about them; possibly they may both prove, on further examination, the very same as Grimwood's plant; but I think they will not.

I CONSIDER them to differ as follows, viz. denticulatum canum is hoaryish, and one or two tooth'd; denticulatum glaucum is very glaucous, and two or three tooth'd; and denticulatum candidissimum is almost mealy, and two, three, or more tooth'd.

rostratum MESEMBRYANTHEMUM acaule, foliis femicylindricis connatis externe tuberculatis.

(29)

Spec. Plant. 696.

Syst. Veg. Lich. Soc. 1. 385.

Syst. Nat. Gmel. Tom. 2. 847.

Ait. Hort. Kew. 2. 191.

Hill's Hort. Kew. 155.

Weston's Nurseryman, 1. 171.

Weston's Cat. 162.

Steel's Essay, 62.

Mill. Gard. Dic. ed. 7. *Mesemb.* 32.

Heron beak'd fig-marygold.

Nat. of the Cape of Good Hope.

Cult.

Cult. 1732. Ait. Kew.

Flowers in Autumn.

OBSERVATIONS.

ROOT, perennial, fibrous.

PLANT, stemless, producing offsets after the manner of minimum, which, on the decaying of the old leaves which enveloped them, appear like distinct plants.

LEAVES, connate, for about half an inch or an inch at the base, expanding, glaucous green, punctate (punctures as if in distant groups, those on the inside, smoothish; those on the outside often tuberculate, especially in stunted plants, but in the healthy plant before me smooth) leaves semi-cylindric, subulate. Or, convex on the outside, flat on the insides, usually triquetrous at the points, not always so; generally about two and a half or three inches long; in the plant before me, some of them nearly six.

THE habit of growth in this plant is much like that of minimum; both plants are strictly stemless in all periods of age.

THE protruding growth of the young leaves in both, bursts asunder the sheathing part of the old leaves, and
causes

causes them to decay or wither, before the new ones are fully formed.

MINIMUM, appears as if its leaves were cut off close to the leaf-sheaths.

ROSTRATUM, extends its semicylindric leaves from two to six inches beyond its half inch leaf-sheaths.

THE FLOWERS of rostratum I have seen, but have no specimen proper for description.

rostra-
toides
(30)

MESEMBRYANTHEMUM, subacaule, foliis glaucis, subulato-subtriquetris, basi extus convexis, intus pustulatis.

Short heron beaked fig-marygold.

Native of

Introduced

Flowers

A new species I believe.

OBSERVATIONS.

THIS is the plant called rostratum minus, at Mr. Lee's; from rostratum; I apprehend it to differ specifically in the following particulars:

DESCRIPTION.

LEAVES expanding, constantly (in all the plants I have seen) more triquetrous than those of rostratum, only about

about half as long; more glaucous, and not so roughly punctate, and furnished just above the base on the inside with a large soft tumid blister, or pustula, which I never observed in *rostratum*, and which almost tempted me to name the plant *pustulatum*; but I preferred the term *rostratoides*, (which will quite point out the plant to those who know *rostratum*) to it, when I recollected the two varieties of *denticulatum* above described, (and perhaps *denticulatum* itself) have similar blisters or pustules, similarly situate.

ROSTRATOIDES, can scarce be the compactum of the *Hortus Kewensis*, the plant next described.

SINCE writing the above description of *rostratoides*, I have seen a plant of it, which had acquired trailing stems, near two inches long.

com-
pactum
(31)

MESEMBRYANTHEMUM acaule foliis connatis punctatis semiteretibus, apice triquetris subreflexis acutis, floribus sessilibus, calyce subcylindraco, sexfido.

Ait. Hort. Kew. 2. 191.

Gmel. Syst. Nat. Tom. 2. 848.

Dotted thick leaved fig-marygold.

Native of the Cape of Good Hope, Mr.

William Paterfon. *Ait. K.*

Introduct.

Introd. 1780, by the Countess of Strathmore. Ait. K.

Flowers November. Ait. K.

OBSERVATIONS.

I HAVE not been able to see this plant at Kew, although I went there twice very lately, for the sole purpose of examining this and four other Mesembryanths, described in the Hortus Kewensis; not one of which have I seen to this day.

albidum

(32)

MESEMBRYANTHEMUM acaule foliis triquetris integerrimis.

Species Plant. 699.

Syst. Veg. Lichf. Soc. 1. 385.

Syst. Nat. Gmel. Tom. 2. 848.

Ait. Hort. Kew. 2. 195.

Hill's Hort. Kew. 155.

Weston's Nurseryman, 1. 172.

Weston's Cat. 162.

Steel's Essay, 62.

Mill. Gard. Dic. Ed. 7. *Mesemb.* 45.

Ficoides Africanum triangulari robustissimo folio, Herm. Par. Bat. 172.

Robust white fig-marygold.

Native of the Cape of Good Hope.

Cultivated 1714. Ait. K.

Flowers, May, July.

OBSER-

OBSERVATIONS.

I HAVE no specimen of this plant in flower, proper for particular description. The following description is drawn from an imperfect specimen.

PLANT, stemless, fine.

LEAVES, incurving, triquetrous, very robust, white and tapering, succulent, but very firm to the touch.

SCAPE, arising from the heart of the plant, stout, tallish, white; furnished above the middle with a pair of bractææ.

BRACTEÆ, connate, placed a little above the middle of the scape, white, incurving, very large and foliaceous, or resembling the leaves of the plant.

CALYX, white.

FLOWER, very large and showy, yellow.

PETALS, numerous, large.

GERM,	}	I have not examined.
STYLES,		
CAPSULE,		
SEEDS,		

FURTHER REMARKS.

ALBIDUM, does not root so very freely from cuttings as the other stemless species.

THE

THE flesh of its leaves is of a much firmer texture than that of the generality of *Mesembryanthema*.

•canum *MESEMBRYANTHEMUM* foliis incanescen-
(33) centibus, sub-acinaciformibus, tri-
quetro-compressis, inferne attenuatis
superne extus gibbosis.

Canescent fig-marygold.

Introduced

Flowers

A new species.

OBSERVATION.

THIS plant I believe to be new and distinct from all others.

DESCRIPTION.

PLANT, apparently stemless, incanescant.

LEAVES, two inches long, crossing each other in pairs, hoaryish, sub-acinaciform, rather hard to touch, and turgid; triquetrous, compressed, attenuate from the middle downwards; sharply keeled; keel hunching out towards the point, which is roundish, with a sharp keeled edge.

THE full-grown leaves resemble the stunted toothless leaves of *M. caninum*, exceedingly.

THEY

THEY also resemble the fullest grown gibbous leaves of *M. fissoides*, which however is a much greener leaved plant.

caninum (34) **MESEMBRYANTHEMUM** sub-acaule foliis opacis apice triquetris, floribus pedunculatis, pedunculis longissimis basi bracteatis.

Mesembr. ringens caninum, *Sp. pl.* 698.

Mesembr. ringens *Syst. veg.* 385.

Mesembr. ringens *Gmel. Syst. Nat. tom. 2.* 847.

Mesembr. ringens caninum, *Ait. Hort. Kew.* 2. 194.

Mesembr. ringens caninum, *Weston's Nurseryman*, 1. 172.

Mesembr. ringens caninum, *Weston's Cat.* 162.

Mesembr. ringens *Hill's Hort. Kew.* 155.

Mesembr. ringens caninum, *Steel's Essay*, 62.

Mill. dic. ed. 7. Mesembr. 39.

Native of the Cape of Good Hope.

Dog Chap fig-marygold.

Cultivated in England, 1714. *Ait. Kew.*

Flowers August to October.

OBSERVATIONS.

Root, perennial, fibrous.

PLANT, stemless whilst young, acquiring by age considerable trailing ligneous stems.

LEAVES, opposite, connate at the base, expanding, glaucous, opaque not marked

marked with lucid punctures, somewhat acinaciform; or, attenuate from the middle downwards to the base, where they are semicylindric; thickening towards the points, where they are triquetrous, with a sharp keel, and sides edged with irregular harmless teeth; terminating in a similar tooth, placed on the inner side.

FLOWERS, large, shewy, yellow, opening in the afternoon, and closing in the evening, about the hour those of dolabrifforme open, supported on long peduncles, and forming a short kind of spike.

PEDUNCLES, often furnished with connate bracteal leaves, long, terminating the branches, usually three; the middlemost of which is often the longest, cylindrical upwards, often nearly ancipitous and thickened.

CALYX, five cleft, or five parted, segments not quite equal, the two outermost being rather longer than the inner three, which are a little shorter, blunter, and membranaceous; all the segments when withered, expanding or recurved.

PETALS, bright shining yellow within, often tinged with purple outwardly, numerous,

numerous, linear, not very blunt, entire.

FILAMENTS, numerous, whitish yellow, in the closed cut open flower before me, converging.

ANTHERÆ, deep yellow, pollen yellow.

GERMEN, in the specimen before me imperfect.

STYLES, five, straight, filiform, as long, or longer than the stamina, greenish-yellow, stigmata simple.

CAPSULE, five cell'd, three of which cells only are perfect in the specimen before me.

SEEDS, I have not seen.

felinum MESEMBRYANTHEMUM acaule, foliis sub-
(35) tus semi-cylindricis, ciliatis, ciliis longis.

Mesembr. ringens felinum, Sp. pl. 698.

Mesembr. ringens β. Syst. Nat. Gm. tom. 2.
847.

Mesembr. ringens caninum, Ait. Hort. K. 2.
194.

Mesembryan. 18 & 19 of *Weston's Cat.* p. 162.

Mesembr. 49 and 51 of *Weston's Nurseryman*,
1. p. 172.

Mesembr. 40, *Mill. Dic. ed.* 7.

Mesembr. ringens felinum, *Steel's Essay*, 62.

Mesembr. felinum, *Hill's Hort. Kew.* 155.

Cat chap fig-marygold.

Native of the Cape of Good Hope.

Introduced

Flowers

OBSERVATIONS.

I HAVE seen this species, (for a species it most undoubtedly is,) in several collections, but have not been able to obtain a specimen for description. By what I recollect of it, it differs from caninum as follows.

PLANT, more resembling the *M. tigrinum*, than the *M. caninum*, less, and softer to the touch, than the latter, and completely stemless in all the stages of growth I have seen it.

LEAVES, shorter than those of caninum, punctate, much softer to the touch, and of a laxer structure, (caninum being of a hard firm texture,) rounded or blunt on the under side or keel, and not acutely triquetrous upwards, as in caninum, edged above with long, harmless spinulose hairs or teeth, not with short, fleshy denticulations, as in caninum.

FLOWERS, I have not seen, but from its affinity to *tigrinum* I should conjecture they are nearly sessile, and arise from the heart of the plant.

THE above description of *felinum*, and the following one of *M. tigrinum*, I must not omit to mention, are written from what I remember of the plants only,
for

for I have not a specimen of either of them, although I particularly solicited for one of the latter at Kew when in flower, which, on account of the managers being out of the way, I was not able to obtain.

I HAVE seen a single leaf of *M. felinum* rooted (or struck as the gardeners call it,) like a slip or cutting.

MR. MILLER regarded the *M. caninum* and *M. felinum* as plants specifically different, the latter of which if I mistake not, he call'd *rostratum* in one of the editions of his most excellent Dictionary.

MILLER was a man of judgment and of science, a man of real practice and merit, whose experience as an Horticulturist, and as a Botanist, was the weighty produce of sixty years, enriched by unwearied assiduity, and almost unequal'd opportunities of putting it to proof. If Miller considered the two last mentioned plants specifically different, surely I may. The opinions of Miller relative to the specific limits of plants deserve more attention than has hitherto been paid them, for they were the results of repeated experiments.

**tigrinum* MESEMBRYANTHEMUM acaule, foliis maculatis ciliatisque, ciliis longissimis.
(36)

Tiger chap fig-marygold.

Introduced

Flowers, September.

A new species.

OBSERVATIONS.

THE *M. tigrinum* is nearest allied to the *M. felinum*, from which I apprehend it to differ specifically in some of the following particulars.

PLANT, stemless in all the stages of growth, I have seen it; more succulent and gross than *felinum*.

LEAVES, rather shorter than those of *felinum*, beset with much longer hairs on their sides, and maculated with numerous whitish coloured spots.

FLOWERS, arising from the hearts or centers of the plant, sessile, yellow, large.

PEDUNCLES, or rather scapes, apparently none.

I THOUGHT of naming this fine new *Me-sembryanthemum*, *maculatum*, or *variegatum*, from its maculated foliage, but on considering the matter, found it most advisable to continue the term *tigrinum*, as it is both sold, and very well known by that name.

**murinum*

**murinum* MESEMBRYANTHEMUM sub-acaule foliis
(37) punctatis basi semicylindricis attenuatis, apice triquetrisque trifariam denticulatis, floribus sub-sessilibus.

Mouse chap fig-marygold.

Introduced

Flowers September.

A new and very pretty species.

OBSERVATIONS.

THIS and the two last plants have been considered by many as varieties only of *ringens caninum* Lin. from which they differ as essentially as I could wish plants to differ from each other, the last of the two is known in the nurseries by the names of the mouse chap fig-marygold and *ringens mus*.

DESCRIPTION.

ROOT, fibrous, finally woodyish.

BRANCHES, in very old plants some inches long, and numerous, forming a fine tufted plant; in young plants none at all for many months.

LEAVES, connate at the base, ringent when young, resembling the gaping jaws of a small quadruped, the denticulations on each side representing teeth; when old, the leaves expand, or even recurve, all the leaves are very

glaucous, only about a fourth part as large as any of the three last described species, and often roughly punctate.

PUNCTURES, lucid, rather elevated into small tubercles than sunk in the body of the leaves, whence a roughness is frequently, not always perceived on the surfaces of them.

FLOWERS, small yellow; I have no specimen of them.

PEDUNCLES,	} I have had no opportunity of examining.
CALYX,	
STYLES,	
CAPSULE, &c.	

dolabri- MESEMBRYANTHEMUM foliis dolabri-
forme formibus punctatis, caule erecto.

(38) *Lin. Spec. plantarum.* 699.

Syst. Veg. Litch. Soc. 2. 385.

Gmel. Syst. Nat. tom. 2. 847.

Ait. Hort. Kew. 2. 194.

Curtis's Magaz. 1. 32. (*excellent.*)

Hill's Hort. Kew. 155.

Rand's Chelsea. 132. *Mesemb.* 18.

Mill. Dic. ed. 7. *Mesembr.* 41.

Gouan's Hort. Monsp. 244.

Weston's Nurseryman, 1. 172.

Weston's Cat. 162.

Steel's Essay, 62.

Hatchet leav'd fig-marygold.

Native of the Cape of Good Hope.

Cultivated

Cultivated 1714, Ait. K.

Flowers May to November.

OBSERVATIONS.

ROOT, perennial, fibrous.

PLANT, upright, stout, by age acquiring a short, shrubby, erect, branched, stem.

BRANCHES, ascending, numerous, short.

LEAVES, impunctate, connate, glaucous green, dolabriform.

FLOWERS, rather more than half the size of those of caninum, of a much brighter yellow colour, opening in an evening, about the hour those of caninum close, and shutting about sun-set.

PEDUNCLES, from one to three, or more; terminating the branches, usually furnished with a pair of foliaceous bractæ.

CALYX, five parted, segments nearly equal, some of them membranaceous.

PETALS, linear, acutish, intire, numerous, of a fine bright yellow colour.

FILAMENTS, longish, yellow, expanding,

ANTHERÆ, yellow, pollen, yellow.

GERM, fleshy, turbinate, as if truncate, obscurely five angled.

STYLES, five, very long and slender, yellow, expanding or curving back.

CAPSULE, carnosæ, truncate, obscurely five angled, with five stellate ovalish

swellings, placed on its top, which are grooved along the middle, and answer to the number of cells in the capsule.

SEEDS, small, in five cells.

*dolabri- *MÆSEMBRYANTHEMUM* foliis sub-dolab-
formoides briformibus punctatis, caule deflexo.

(39) Lesser hatchet leav'd fig-marygold.

Introd.

Flowers

A new *Species*.

OBSERVATIONS.

I HAVE formed the above character from having seen the plant only at Kew: it appears distinct from dolabriforme, (a starved plant of which it greatly resembles) in being about half as large in all its parts, in having a weak, very short, apparently trailing stem, and green leaves, of a shape somewhat acinaciform-hatcheted, or between cymetar and dolabriform.

THE whole plant appears less glaucous.

M. DOLABRIFORME of Linnæus, has a stout, erect, short, branched, stem.

M. DOLABRIFORMOIDES, has a short, weak, small stem, apparently incapable of supporting itself.

IN fine, it differed, in my eye, much after the same manner as *deflexum* Ait. K. differs

differs from *emarginatum* Ait. K. the former of which has leaves and flowers similar to the latter, but wants its upright stem.

difforme
(40)

MESEMBRYANTHEMUM foliis difformibus
punctatis connatis.

Species Pl. 699.

Ait. Hort. Kew. 2. 195.

Ficoides Africanum luteum procumbens longissimis foliis, *Herm. Par. Bat.* 168.

Deform'd fig-marygold.

Native of the Cape of Good Hope.

Cultivated 1732, Ait. K.

Flowers almost the whole year.

OBSERVATIONS.

THE above are all the synonyms I wish to apply at present to this species, on account of its near approach to the next mentioned plant, which, however, is as nearly allied to *angustum* and *longum*, as to *difforme*.

DESCRIPTION.

Root, fibrous, fibres very white, and covered, whilst very young, with woolly hairs, resembling white mould, which are best observed on the fibres, as they protrude themselves through the hole in the pot.

PLANT,

PLANT, whilst young stemless, acquiring by age, a short branched decumbent stem.

BRANCHES, extremely short, alternate, crowded, and arising from the axillæ of the leaves, invested with the permanent withered sheaths of the leaves.

LEAVES, connate, covered with minute lucid punctures, deep green, varying astonishingly in their different periods of growth, and from the different age of the plant which produces them. In young healthy plants, before they acquire any stem, exceeding long, that is, from three to six inches long; in a young drawn plant in flower before me, some of them even seven inches long, of different shapes, some of them semicylindric from the base upwards, with a kind of half twist from the middle to the point, where they are compressed triquetrous, or acinaciform, or inclining to dolabriliform at the very point, with a sort of lobe-like tooth near the point, which often terminates in a cartilaginous hair, or harmless bristle, which is either straight, or curved, or hooked; other leaves without either a tooth or lobe-like rising, but hooking down, or gibbous near the point, or with a hollow above, one
side

side of which forms a ridge-like eminence. Some of the leaves angular, most of them from a quarter to half an inch broad in a plant before me, which has acquired a short stem, some of the inner leaves of which are not above one inch long, others to four inches long, the youngest of which are rather cartilaginous towards the points, all of them more or less oblique, with some vestige of a tooth upwards, and some of them, towards the top, microscopically ciliate.

FLOWERS, arising from the alæ of the leaves, large, yellow, opening in the forenoon, and greatly resembling those of lingueforme of these OBSERVATIONS.

PEDUNCLE, or rather scape, as the plants flower in the open air, extremely short, or scarce any, except you call the quadrangular base of the calyx so.

CALYX, almost four parted, irregularly quadrangular, very fleshy and large, segments unequal, acute, and sharply keel'd; the lesser ones membranaceous.

PETALS, very long and numerous, narrower than those of my lingueforme, bright shining yellow, changing as they die, to reddish saffron.

FILAMENTS,

FILAMENTS, very numerous, of different lengths, some of them very long, yellow, expanding.

ANTHERÆ, small, yellow, pollen, yellow.

GERM, when cut longitudinally with a sharp knife, each of its segments exhibits the shape of a paper kite; when intire, it is pear or fig shaped, strongly marked with eight ribs or angles, grooved on the back, and girt with a fleshy ridge.

STYLES, eight, in the flower I have just dissected, and which is the only one I have living, expanded flat, with incurved points, at least the eighth of an inch long, ragged, or feathered all their length, with short fleshy substances.

CAPSULE, fleshy, small for the size of the calyx, eight cell'd in the only one I had to cut, pear or fig shaped, eight angled or ribb'd, angles groov'd along the backs; when cut horizontally, displaying eight small handsome triangular cells, and eight handsome cartilaginous, stellate, or radiating lanceolate white partitions, opakish in the middle, with a fleshy green pop or spot, separating them in the center.

SEEDS, very few, very small, white, while in the growing capsule, kidney form,

(in

(in the microscope) smaller at one end ; hunched, or thicker at the other, attached to filaments or pedicles, and nestling in the carnosé pulp of the cells.

ADDITIONAL OBSERVATIONS.

THE leaves (in young plants particularly) grow in an ascending posture, and point nearly two ways, that is, have very little tendency to cross each other ; they are of a firm texture, when properly supplied with water, and their sheathing or connate parts are considerably higher on one side than the other, in some of which particulars they differ very much from the next described plant, which is now growing before me.

crucia-
tum
(41)

MESEMBRYANTHEMUM acaule foliis femicylindræis subulatis sub-diformibus, tenerrimis, crassis, patentibus, cruciatim positis.

Ficoides afra ; foliis latissimis, crassis, lucidis, cruciatim positis Boerb. Ind. alt. Hort. Lug. Bat, pars 1. 292.

Dwarf cruciate fig-marygold.

Native of

Introduced

Flowers May to November.

OBSER-

OBSERVATIONS.

THIS is a very fine looking plant, and much resembles *difforme* and my *angustum*; it is intermediate, and I think distinct.

I FIND no description of it in any work I have, except the above *Index alt. H. L.* of Boerhaave, a work which I have just procured, and shall in the following part of my OBSERVATIONS refer to. In it too, I am not a little pleased to find the genus divided into sections, which are not totally unlike my own; had I seen them sooner, I might perhaps have profited by them.

DESCRIPTION.

ROOT, perennial, fibrous; young roots clothed with woolly hairs.

PLANT, nearly stemless, very succulent.

BRANCHES, none in young plants; in very old ones, very short gross stems or branches are acquired, like those of my *lingueforme*, and not so long as those of *difforme*.

LEAVES, between connate and perfoliate, patent, usually pointing four ways, especially in young plants, whence the term *cruciatum*; impunctate, deep shining

shining green, with various sized pellucid roundish spots, very gross and succulent, covered with a thin skin, and soft to the touch, not all shaped exactly alike, some of them being semicylindric, with bluntly, triquetrous, obliquely curved points, and turgid on the upper surface, about three inches long, and one broad at the base; others semicylindric, subulate, narrower, longer, and somewhat obliquely twisted, departing a little from the cruciate posture of the others; all the old leaves appear swollen on the upper sides, particularly near the base, where they are somewhat dilated and broader.

FLOWERS, solitary, large, yellow, scarce so large as those of *difforme*, arising from the bosoms of the stoutest leaves, and supported on peduncles, or rather scapes.

PEDUNCLES, one or two inches long, declining; in the specimen before me, between semicylindric and ancipitous, or angularly ancipitous, (edges rounded) deep green, excessive gross, of an equal thickness to the very calyx; whereas the pedunculi of the *M. difforme*, to which this plant is closely allied, are upright, very short, and not of an equal thickness.

CALYX,

CALYX, four cleft, but not quadrangular, segments unequal, 2 outer shorter keel'd, with thin edges and blunt points, 2 inner longer, very broad and thin, without keels, composed chiefly of a broad thin membrane, which closely envelopes the parts of fructification before the expansion of the flowers.

PETALS, numerous, some of them end nicked, not quite so long as those of difforme but broader.

FILAMENTS, very numerous, short, yellow, expanding.

ANTHERÆ, large, oblong, furrowed on both sides, and end nick'd, yellow.

GERM, very small for the size of the plant.

STYLES, short, nine in the only specimen I have to dissect.

CAPSULE, small, for the size of the plant, attenuate downwards, with a hollow or a navel at the top, nine angled or nine grooved, nine celled.

SEEDS, numerous, small.

*angustum **MESEMBRYANTHEMUM** acaule foliis lineari-lingueformibus longis semi-cylindraceis.

Narrow tongue leav'd fig-marygold.
Introduced

Native

Native

Flowers September.

A new species.

OBSERVATIONS.

THIS is the plant which is known to some by the name of *lingueforme angustifolium*, being much narrower, and less tongue form, and indeed more a kin to *præpingue* and *cruciatum*, than any of the tongue leaved plants of this tribe.

I HAVE no specimen of it, the leaves from what I recollect by seeing them at Kew, are from three to four or five inches long, and about a quarter or half an inch broad, pointing two ways, planeish above, and convexish below, nearly of an equal thickness throughout, and ending in blunt points.

I BELIEVE it to be distinct from the other *lingueform* species, and find no certain mention of it in any author I have consulted.

longum MESEMBRYANTHEMUM foliis lingue-
(43) formibus longissimis subæqualibus, pedunculis elongatis.

Mesembr. lingueforme d, Lin. (*Sp. pl.* 699.)
who quotes the first of the following authors.

M

Mesembr.

Mesembr. folio lingueformi longiore, dil. eth.
238, t. 185, f. 227.

Mesembr. lingueforme, 3, Syst. Nat. Gm. tom.
2. 848.

Ficoides afra. acaulos foliis latissimis, crasis,
lucidis conjugatis flore aureo amplissimo,
Beer. Ind. alt. Hort. Lug. 1727. pars
1. p. 292.

M. lingueforme longa Weston's Nurseryman,
v. 1. 179.

M. lingueforme longum, Weston's Cat. 162.

M. folio lingueformi longiore, Rand's Chel.

Mesembr. 43. Mill. Dic. ed. 7.

Long tongue leav'd fig-marygold.

Introduced

Native of the Cape of Good Hope.

Flowers almost all the year.

OBSERVATIONS.

MR. AITON does not notice this plant
in his Hortus Kewensis, but I have
seen it very fine at Kew.

DESCRIPTION.

ROOT, perennial, fibrous.

PLANT, nearly stemless, acquiring by
degrees a very short stem.

LEAVES, lingueform, very long, and suc-
culent, deep green shining, and point-
ing two ways.

FLOWERS, arising from the bosoms of the
strongest

strongest leaves, very large, yellow, glittering, two or three inches in diameter, supported on long peduncles, or scapes.

PEDUNCLES, two inches long or more, ascending nearly triangular.

CALYX, four cleft, segments unequal, three outermost of them with an acute keel, and membranaceous edges, lying over the innermost, which is much less.

PETALS, bright yellow, broadish, linear, long.

FILAMENTS, long, yellow.

ANTHERÆ, oblong, of a fine yellow colour, pollen bright yellow.

GERMEN, very obtuse, ten angled, or ten grooved.

STYLES, ten, short and yellow.

CAPSULE, ten cell'd, ten angled.

SEEDS, numerous small, ripe ones I have not seen.

***præpin-** **MESEMBRYANTHEMUM** foliis lingue-
gue formibus latiusculis permollibus, juni-
(44) oribus ciliato-pubescentibus, angustio-
 ribus apice incurvis.

DESCRIPTION.

Root, perennial, fleshy above, and emitting various fibres, which are not

so thickly clothed with down as those of the other lingueform'd species.

PLANT, stemless, intermediate between my lingueforme and longum, but distinct, as will appear by comparing my descriptions of the three.

LEAVES, in the fine specimen now in flower before me, perfoliate, lucid, faintly impunctate, exceeding fleshy, fat, and soft to the touch, more so than any other Mesembryanthemum I am acquainted with, on which account I have named it præpingue, (very fat,)—of a paler green, and covered with a thinner skin or coat than the other tongue leaved species, whitish and shining near their inner bases,—or as if frosted over with exceeding minute papillæ,—when young rather narrower than when old, and edged with minute ciliæ, or a pubescence,—of different shapes and lengths,—when old broadest,—some of them lingueform, with points obliquely incurving, like those of difforme,—some between semicylindric and lingueform,—others narrower, longer, oblong lingueform, without any oblique curve or ridge near the points,—others with subulate triangular points, bent and ending in harmless white bristles, or short points,

points,—and a few, with broad compressed; subdolabriform keel'd points, ending in short white bristly hairs.

FLOWERS, not so large as those of my lingueforme, of long duration, and a bright shining yellow colour, nearly sessile.

PEDUNCLES, or rather scapes, if any, exceeding short, arising from the bottoms of the shortest leaves, rather angular and smooth.

CALYX, four cleft segments unequal, all with membranaceous edges, and ciliate keels, two of them longer than the others, with broad plain dilated bases, triangular points, and slightly membranaceous edges,—the other two shorter, every way surrounded, with broad fine brownish reticulated membranes.

PETALS, bright shining yellow, broad, linear-lanced, and at the points, end bitten-crenate.

FILAMENTS, numerous, erect, expanding, short, of different lengths, yellow.

ANTHERÆ, large, numerous, oblong, deep yellow, pollen yellow.

STYLES, eight, as if united below, occupying the deep hollow on the crown of the germ, expanding above, rough, with shaggyish fleshy hair like substances.

GERM, not small, with a large deep hollow or navel at top.

CAPSULE, small, and grooved or angled,—angles blunt, as if truncate above, with a large deep hollow or navel,—eight celled.

SEEDS, few, ripe ones I have not seen, small.

lingue-
forme
(45)

MESEMBRYANTHEMUM foliis lingueformibus latis obtusis, junioribus angustis brevioribus, floribus brevissime pedunculatis, calycibus laciniis sub-tuberculatis carinatis, carinis ciliato-pubescentibus.

M. lingueforme, *γ*, *Sp. pl.* 699.

Lin. refers the plant to *Mesembr. folio lingueforme angustiore*. *Dill. Elth.* 238. *t.* 185. *f.* 227.

Mesembr. lingueforme, *γ*, *Ait. Hort. Kew.* who also refers to *Dill.*

Mesembr. γ. *Rand's Chelsea*, 131. who likewise refers to *Dill.*

M. lingueforme angusta, *Weston's Nurseryman*, 1. 173.

M. lingueforme angustum, *Weston's Cat.* 162.

Mesembr. acaule foliis lingueformibus latissimis pedunculis brevioribus *Mill. Gard. Dic. ed. 7. Mesembr. 44?*—*Miller* only describes two species with tongued leaves, in the 7th ed. of his *Dict.* viz. the present one and *longum*.

Ficoides afra acaulos, foliis latissimimis, crassissimis, lucidis, conjugatis, brevioribus,
flore

flore aureo, amplo, pedunculo brevi. Bærh.

Ind. alt. Hort. Lug. Bat. Pars. 1. page

292. Ficoides 7. of the 3d section.

Tongue leaved fig-marygold.

Introduced

Flowers almost all the year.

OBSERVATIONS.

Root, perennial, covered with a fleshy bark upwards, and emitting innumerable divaricating fibres.

STEM, none at all in young plants, but a very short prostrate stem is acquired by age, which is roundish, gross, and covered with the decayed leaf sheaths of the plant.

LEAVES, fine green, pointing two ways, and lucid, tongue-form blunt, with blunt edges, one of which is rather thicker than the other, destitute of the cartilaginous rising, at the base of the leaves of *M. scalpratum*, and more obtuse, and nearly as long, the inner or younger ones much narrower and shorter than the outer.

FLOWERS, yellow, solitary, arising axillary, from the central leaves of the plant, near three inches in diameter when fullest expanded, and nearly as large as those of *scalpratum*, constantly furnished with very short peduncles, open-

ing in the morning, and making a fine appearance.

PEDUNCLES, or rather scapes, some half an inch long, thickening very fast upwards and quadrangular, drawing their angles from the keels of the calycine partitions.

CALYX, fleshy, four parted, studded with small and distant tuberculæ or lucid warts, each part proportionably slenderer, longer, and more acute than in *scalpratum*, two and sometimes three of the parts rather larger than the fourth, which in the specimen before me, has a very large transparent somewhat reticulated membrane, bearing no distant resemblance to the wing of an insect. The keels of the partitions are more sharp than those of *scalpratum*, and finely edged with a ciliating pubescence, which I have not detected in *scalpratum*.

PETALS, of a fine yellow within, whitish yellow on the outside, numerous, linear, but broad for a *Mesembryanthemum*, and firmly united at the base, shorter and narrower than those of *scalpratum* and more acute, with rarely more than one notchlet at the point, and often intire.

FILAMENTS, numerous, of different lengths, inner ones shortest, expanding, yellowish.

ANTHERÆ, oblong, yellow, smallish for the size of the flower, pollen, yellow.

STYLES, ten, short, expanded, or recurving, plumose, fleshy.

GERM, depressed, fleshy, with a navel at the top, ten angled, angles blunt, looking like ribs, grooved along the back, and yellowish green.

CAPSULE, fleshy, small, for the size of the plant, ten angled, angles blunt, and grooved down the back, ten celled, cells filled with numerous seeds.

SEEDS, whilst the plant is in flower, nestling in the fleshy cells of the capsule, white, kidney-shaped, attached to small white curving filaments.

REMARKS.

As a corroborating testimony of this plant's being specifically distinct from the other tongue-formed species, I may add, that I have raised myself at different times some dozens of young plants of it from seeds, every one of which proved exactly like their parent in every particular.

THE seeds were gathered from the living plants as they grew on the shelf of a green-house, which held above forty species, promiscuously arranged.

latum MESEMBRYANTHEMUM foliis lingue-
(46) formibus breviusculis latis equalibus,
floribus subsessilibus.

Mesembr. lingueforme B. Sp. Pl. 699, where
Lin. refers to *Mesembr. lingueforme latiore*
Dill. Elth. 236. t. 184. f. 224.

Mesembr. lingueforme B. Ait. Hort. Kew:
2. 195.

Mesembr. lingueforme lata, Weston's Nursery-
man, 1. 172.

Mesembr. lingueforme latum, Weston's Cat.
162.

Mesembr. lingueforme latiore, Rand's Chelf.
131. No. 6.

Miller has it not in the 7th ed. of his Dic.

Ficoides afra acaulos, foliis latissimis cras-
sissimis, lucidis, conjugatis, flore aureo
amplo, sine pedunculo, Boerb. Ind. alt.
Hort. Lug. Bat. pars 1. p. 292. No. 6?

OBSERVATIONS.

THIS plant is closely allied both to my
lingueforme and *scalpratum*; I look
upon it intermediate between the
two, but distinct from both, and such
(it

(It appears by the synonyma above) were the opinions of Dillenius and Boerhaave.

I HAVE seen the plant and in flower, but as I have no specimen proper for description, can only say, that its principal difference from my lingueforme is, in its being rather a broader leaved plant, whose young leaves are nearly equal in length and breadth to the old ones; which is by no means the case in my lingueforme. There is also a difference in the flower and footstalk, which as I have no specimen, I cannot particularize.

M. LATUM differs from M. scalpratum in being far less, and in having no cartilaginous eminences on the inner bases of the leaves.

AND from M. longum, in wanting the long peduncles of that plant, and in having leaves scarcely more than half as long.

FROM angustum, in having much broader and shorter leaves.

AND from M. præpingue, in being of a much denser, firmer, and more opaque texture, with regular leaves.

scalpra-
tum

(47)

MESEMBRYANTHEMUM foliis scalprati-
formibus latissimis, altero margine
crassioribus, basi inferiore cartilagineo-
gibbosis;

gibbosis; calycibus glaberrimis; floribus maximis sessilibus, petalis apice crenulatis.

Mesembr. lingueforme, Lin. Sp. Pl. 699.

Linn. refers to *Mesembr. folio scalprato*, Dill.

Elth. 235, t. 183. f. 224.

Mesembr. lingueforme, Syst. Nat. Gmel. Tom. 2. 848.

Mesembr. lingueforme, Syst. Veg. Lich. Soc. 1. 385.

Mesembr. lingueforme, a, Ait. Hort. Kew. 2. 195.

Mesembr. lingueforme, Hill Hort. Kew?

Mesembr. lingueforme, Steel's Essay, 62.

Mesembr. lingueforme, Weston's Nurseryman, 1. 172.

Mesembr. lingueforme, Weston's Cat. 162.

Miller has it not in the 7th edit. of his Dic.

Mesembr. folio scalprato, Rand's Chels. 131. No. 5.

Ficoides, afra acaulos, foliis albes latissimis; crassissimis lucidis; flore aureo, amplo, sine pedunculo, Bærh. Ind. alt. Hort. Lug. Bat. pars 1. 292. No. 10.

Broadest tongue leaved fig-marygold.

Introduced

Native of the Cape of Good Hope.

Flowers almost all the year.

OBSERVATIONS.

Root, covered with a very fleshy bark upward, ramifying below into various large white strong fibres.

STEMS,

STEMS, none at all, without the plant is very old, and then extremely short, prostrate, gross, and covered with the rubbish of the decaying permanent sheaths of the leaves.

LEAVES, of a lighter green than the other tongued species, at the bases often whitish green, not very constant to any exact shape, said to be scalpratiform (that is, like a graver's tool) by Dillenius, and called lingueform, by Linnæus; they are smooth and lucid, very broad, often two inches over, but oftener less, much thicker on the under edge or margin, than the upper, so much so, as often to form three angles, the upper of which is remote from the other two, and sometimes edged with a thin whitish cartilaginous membrane; a white cartilaginous gibbosity or ridge is also present at the inner bases of most of the leaves, especially the young ones, in which respect scalpratium differs from all the other tongue-formed species.

FLOWERS, solitary, sessile, arising from the axillæ of the stoutest leaves, extremely large, measuring from three to four inches in diameter, the specimen before me, when expanded to the utmost, extending in two directions,

regions, somewhat beyond the fourth inch on the rule, which is by me; but it is a flower unusually large. The flowers are of a glittering yellow colour, open in a forenoon, and make a showy appearance in the Winter season, particularly when arranged with other fig-marygolds.

PEDUNCLES, or rather scapes, none.

CALYX, large, fleshy, irregularly quadrangular, attenuate downwards, funnel-shaped, and four cleft, or parted, segments, two, somewhat longer than the others, not furnished with such large membranes, and sharply carinate; all of them blunt, and more or less membranaceous, the two shorter having very large irregular diaphonous membranes.

PETALS, fleshy, and united at the base, of a shining glossy yellow colour on both sides; almost diaphonous near their edges, linear-oblong, broader than in any *Mesembryanthemum* I have seen flower; attenuate at the base, of nearly equal lengths, most of them with from two to four minute irregular notchlets, or serratures, at their very blunt points.

FILAMENTS, very numerous, long, yellowish, stout, and of various lengths.

ANTHERÆ,

ANTHERAE, not large for the size of the flower, oblong, fulcate; pollen yellow.

GERMEN, pear-shaped, not very large for the size of the flower, ten angled, with a hollow or navel at the top, and grooves along the backs of the angles.

STYLES, ten, the eighth of an inch long, expanded, fleshy and feathery, or bearded on the upper side, bare on the undersides; looking as if keel'd.

CAPSULE, in the growing flower before me, ten or eleven cell'd, but dryish, with a large dryish fleshy center, to which the partitions seem affixed; cells small and dryish.

SEEDS, several in each cell, small, not nestling in fleshy pulp, affixed to filaments, as in many other, perhaps most species.

M. SCALPRATUM principally differs from the other tongue leav'd species in its larger, broader, cartilage-based leaves, and larger sessile flowers.

††† CAULESCENTIA FOLIIS PLANIS.

humifum (48) **MESEMBRYANTHEMUM** foliis amplexicaulibus, spathulatis carinatis, papulosis conicis scabris, petatis minutissimis.

Ait. Hort. Kew. 2. 179.

Syst. Nat. Gmel. Tom. 2. 844.

Narrow

Narrow leav'd icy fig-marygold.

Nat. of the Cape of Good Hope, Ait. K.

Introd. 1774, Mr. Fr. Maffon, Ait. K.

Flowers July and August, Ait. K.

OBSERVATIONS.

THIS is one of the Kew Catalogue Species, which I have not seen; it is a shrub, according to the Hort. K.

cordifo-
lium

(49)

MESEMBRYANTHEMUM foliis cordatis
obtusis, caulibus prostratis.

Supplem. Plant. 260.

Ait. Hort. Kew. 2. 182.

Syst. Veg. Lich. Soc. 1. 383.

Glox. obs. bot. p. 22. t. 1. fig. a.

Smith Spic. Bot. page 6. plate 6. excellent.

Syst. Nat. Gmel. Tom. 2. 844.

Heart leav'd fig-marygold.

Nat. of the Cape of Good Hope.

Introduced 1774, Ait. K.

Flowers all the year.

OBSERVATIONS.

AFTER the accurate and minute account of this *Mesembryanthemum*, in the *Spicilegium Botanicum*, little remains for any one to add.

BUT as the following description of it was drawn up from a living specimen, before

fore. I even thought of the above-mentioned account, I am tempted to insert it.

DESCRIPTION.

PLANT, becoming shrubby by age, if kept in the house, and diffusely trailing; if left to itself in the open air, prostrate, extending many feet every way, dying down with the first sharp frost, but renewing itself by seedlings, which appear the following season.

LEAVES, petiolate, (a most rare circumstance in this genus) the largest hearted, the lesser often ovate, covered with minute spangling papillæ.

PEDUNCLES, short, axillary, one flowered.

CALYX, four cleft, segments unequal, two short semicylindric, subulate,—two foliaceous, ovate, large, shining with minute chrystalline papillæ.

FLOWERS, numerous, sub-axillary, very small, bright purple, opening in a forenoon, and remaining open some time.

PETALS, linear, numerous, in several series, and not all of equal lengths, far shorter than the calycine leaves.

GERM, large, seeds many, large, soon vegetating.

N

REMARKS.

REMARKS.

I HAVE seen plants of this *Mesembryanthemum*, when planted out on a south border, and in the East Riding of Yorkshire, not only cover many feet of ground with their trailing prostrate stems, but flower abundantly, and perfect seeds, which vegetated the following season, and became in every respect as fine as the plants which produced them, but suffered from the first severe frosts, but not before they had also perfected seeds.

I HAVE also seen a small cutting of this *Mesembryanthemum*, planted in a 60 sized pot, and never shifted, take root; and in two years extend two trained branches along the rafters of a greenhouse, above 20 feet, flowering and perfecting seed all the time; after which, it was broke by an accident, and thrown away, but its extreme points were growing briskly at the time it was destroyed.

I KNOW of no other *Mesembryanthemum* capable of extending its branches such an amazing length, in so small a pot.

cordifo-
lium
album
(50)

THE *M. cordifolium* is placed in the white flowered section, both in the *Syst. Veg. Lich. Soc.* and *Gm. Syst. Nat.* but with us the flowers are constantly purple, not varying from seed in the least respect.

LIN. the son, in *Suppl. Pl.* above quoted, conjectures the flowers to be white, which is possibly the reason of its being referred to the white sections of those two books, at least, if we may suppose, their authors never saw the living plant in flower.

expansum
(50)

MESEMBRYANTHEMUM foliis planiusculis lanceolatis impunctatis patentibus, distinctis oppositis alternisque remotis.

Species Plantarum, 697.

Petiver's Gaz. t. 78. f. 10. is referred to by Lin. but it is not very expressive, resembling *tortuosum* almost as much as this species.

Syst. Veg. Lich. Soc. 1. 383.

Syst. Nat. Gmel. Tom. 2. 844.

Ait. Hort. Kew. v. 2. 181.

Hill's Hort. Kew. 155.

Weston's Nurseryman, 1. 171.

Weston's Cat. 162.

Steel's Essay, 60.

Mesembr. 3. tortuosum foliis sempervivi expansis *Rand. Chelf.* 131.

Mesemb. 38. *Mill. Dic. ed. 7.*
Houseleek leav'd fig-marygold.
Nat. of the Cape of Good Hope.
Cultiv. 1705, Ait. K.
Flowers June to August.

OBSERVATIONS.

I HAVE no specimen of this plant by me proper for description; it is common in collections, and I have seen it flower abundantly this season; it is allied to *tortuosum* and *pallens*; it is intermediate, but extremely distinct. Linnaeus places it in his yellow section, Mr. Aiton in his white.

tortuo-
sum
(51)

MESEMBRYANTHEMUM foliis planiusculis, oblongo-ovatis sub-papillofis, confertis, connatis, calycibus triphyllis bicornibus.

Species Pl. 697.

Syst. Veg. Lichf. Soc. 384.

Syst. Nat. Gmel. Tom. 2. 847.

Ait. Hort. Kew. 2. 193.

Hill's Hort. Kew. 155.

Weston's Nurseryman, 1. 172.

Weston's Cat. 162.

Steel's Essay, 62.

Mesembr. 4. *Rand. Chelsea,* p. 130.

Mesembr. 37. *Mill. Dic. ed. 7.*

Tortuose

Tortuose fig-marygold.

Native of the Cape of Good Hope.

Introduced

Flowers July.

OBSERVATIONS.

THIS plant resembles the expansum in several particulars; by age it acquires a considerable stem, furnished with various winding or crooked decumbent branches, which finally become woody.

THE leaves are of yellowish green, those of expansum, a true deep green—I have no specimen proper for description.

The young leaves when just beginning to open or separate, have a very striking resemblance to the beak of a bird.

pallens MESEMBRYANTHEMUM foliis oppositis
(52) amplexicaulibus distinctis oblongo-lanceolatis, acutis, obtuse carinatis, papulis minutis.

Ait. Hort. Kew. 2. 183.

Syst. Nat. Gm. Tom. 2. 843.

Pale fig-marygold.

Nat. of the Cape of Good Hope, Ait. K.

Introduced 1774, Mr. Fr. Maffon, Ait. K.

Flowers July to October.

OBSERVATIONS.

I HAVE changed the English name of this plant, from channel leav'd, to pale, for the term channell'd will more properly belong to the plant I shall call canaliculatum.

DESCRIPTION.

PLANT, at first, apparently herbaceous, but becoming shrubby by age.

BRANCHES, prostrate, spreading in various directions, nearly cylindrical.

LEAVES, on the barren branches glaucous, but not white, mostly opposite, oblong-lanced on the fertile or flower bearing branches, channelled above, bluntly keel'd below, and covered with minute papillæ. Those of the flower bearing branches, alternate, hearted at the base and stem, clasping.

FLOWERS, largish, clear white, pointing two ways, disposed alternately at remotish distances, in a loose trailing dichotomous kind of a panicle, opening in the forenoon, and continuing open several hours.

PEDUNCLES, long, somewhat angular, expanding, axillary, when there are two leaves near each place of their insertion; when

when only one, they arise from the joint opposite such leaf.

CALYX, mostly five, sometimes only four cleft; when five cleft, three of the segments are broad, plain, and foliaceous, the other two much less, sub-keel'd and membranaceous at the edges, with terminating subulate points.

PETALS, very white, of unequal lengths, linear, emarginate, longer than the greatest segments of the calyx.

FILAMENTS, yellowish, expanding, of various lengths, innermost gradually the shortest, some of them appearing as if hooked, being of a stameneous nature, and bearing half formed unfertile antheræ on their summits.

ANTHERÆ, yellow, pollen, yellow.

GERMEN, oval, not visibly angular.

STYLES, five, yellow, long, erectish, stigmata simple.

CAPSULE, five cell'd, filled with small seeds.

†††† *SUFFRUTESCENTIA FOLIIS SUBTUS
ROTUNDATIS.*

viridiflo- **MESEMBRYANTHEMUM** foliis semicylin-
rum draceis papuloso-pilosis, calycibus quin-
(53) quefidis hirsutis.

Ait. Hort. Kew. 2. 196.

Syst. Nat. Gmel. Tom. 2. 848.

Green flowered fig-marygold.

Native of the Cape of Good Hope, Mr.

Fr. Maffon, Ait. K.

Introduced 1774, Ait. K.

Flowers July to November.

OBSERVATIONS.

Root, perennial, fibrous.

PLANT, woodyish below, covered with a greyish coloured bark, and emitting a scent when bruised.

BRANCHES, the principal or lower ones, mostly opposite, arising from the axillæ of the leaves, decumbent, and finally causing a gibbosity on each side of the stem at their origin, from the external swelling of their somewhat thickened bases; whilst young, smooth and papulose below, covered higher up with pilefcent papulæ, and at the uppermost parts with short, numerous, horizontal hairs.

LEAVES, dark green, opposite, connate, or rather perfoliate, sheathing the stems; semicylindric, very blunt, channell'd above, rounded beneath; lower ones erect, incurving, imbricate, crossing each other in pairs, shining, smooth, papulose, and resembling the links of a chain as they fit on the stems; upper ones

ones expanding more and more distant, pointing obliquely upwards, and ciliate at the base, with pilefcent papulæ; uppermost ones often alternate, covered every where, but chiefly towards the bases of their edges and keels, with pilefcent papulæ.

FLOWERS, in the specimens before me, terminating the weak trailing branches, from one to five in number; when three or four, they form a small dichotomous kind of a panicle; when five, they arise axillary from the alternate leaves of the stem, and form a kind of spike, which curves sharply upwards, if the branches are suffered to trail in their natural posture. The flowers are of the diameter of a shilling, when fully expanded, quite green, inside and outside, and open in the forenoon.

PEDUNCLES, cylindrical, covered with numerous extremely short horizontal hairs, at first appearing of a considerable length, attenuate at the base, and as if furnished with from one to three alternate bracteal leaves, resembling those of the stems, but less, which finally prove themselves no bracteas, by protruding from their axillæ young
alternate

alternate shoots, the perennial sources of future flowers.

CALYX, ovate, very obscurely pentangular, which only appears on cutting it, horizontally asunder, largish, densely covered with short horizontal hairs, which in the microscope appear like pilefcent papulæ, five cleft, segments unequal, cylindrical obtuse, papulose-pilefcent, two of them longer than the other three; three shorter and membranaceous on the edges, one of them only membranaceous on one side, and somewhat longer than the other two membraned ones, all of them foliaceous, or resembling the leaves of the plant, but not channelled.

PETALS, very numerous, as slender as bristles, acutely pointed; when fresh of a bright green colour, of various lengths, innermost the shortest, and often converging so as to exclude the stamina from the sight, and of a yellowish tinge, particularly when expanded the first time; the longest petals after they have been expanded several times, acquire a whitish tinge at their extremities, especially on the outside. All the petals when they decay, coalesce and melt into a pulpy mass, and become almost as soft a matter as the aged gills of a deliquescent agaric.

FILAMENTS,

FILAMENTS, numerous, very short, but of different lengths, seldom fairly visible to the eye in the growing flower, occupying a caving between the germ and bases of the slightly united petals, of a whitish green colour.

ANTHERÆ, large white, nearly square, nicked both ways, with a deep furrow on each side, which gives them almost a didymous appearance; pollen whitish.

GERM, urn shape, five angled, not navel'd at top, very juicy, and green, displaying, when cut longitudinally, all the parts of fructification in situ, a most beautiful object to a contemplative mind, either with or without a glass, particularly if a flower is chosen whose petals are just peeping through the calyx, but have never been expanded; such an object I would recommend my readers to select, and I would wish them, after looking at it a little with the naked eye, to re-examine it with a moderate magnifier, through which they will see, if the subject is suitably selected and properly cut, a sight that conveyed to my mind both instruction and pleasure.

THE longitudinal section of the flower, represents precisely half an oval, which
is

is internally composed of three principal groups, of objects or figures, viz. the seeds, antheræ and petals, to which may be added, the five erect central styles. The petals are deep green, and by arching, protect the turgid whitish unopened antheræ, as yet big with the principles of life, beneath which appears the urn shaped germ, in whose inversely ovate punctate cells, the infant, and as yet unimpregnated ovas, or seeds, are observed to nestle, they are white in this early state, and extremely minute, but sufficiently visible in the glass, and kidney shaped, affixed by capillary filaments or tubes, in regular orders, to the central pillar of the germ, (which appears to be composed of the united bases of the styles, from which the partitions of the capsule derive their origin,) affixed I say in regular orders to the swelling or breast-like centre of the germ, thence deriving life by the white filaments, which are inserted into the body of the seeds, at the base of the sinus, which gives them their kidney shaped form. Through these tubed filaments, (as through a navel string,) they doubtless draw that nourishment which continues and enlarges their existence,

istence, (like the half organiz'd embryo of an animal deriving life for the maternal placenta, by its umbilical cord,) and through them they are also destined to receive the vivified and vivifying fovilla, as soon as it shall be luxuriously communicated from the exploded atoms of the rent pollen, to the unfolded, watchful, and recipient summits of the moist, obeying, voluptuous stigmata.

SUCH were the ideas which presented themselves to my view, on examining the fructification of *Mesembryanthemum viridiflorum*; but to return to the description of its

STYLES, they are five in number, shortish green, subulate, erectish, or erect-patent; stigmata, simple.

CAPSULE, urn shaped, pentangular, five cell'd, cells inversely ovate, and whilst young papulose on the inside, partitions five, appearing white in a transverse section of a young germ, stellate, and resembling in miniature a similar section of the core of an apple. In the center of the partitions, when so cut, appear the segments of the united bases of the styles, green and radiating five ways.

SEEDS,

SEEDS, not very numerous, small, and kidney shaped, ripe ones I have not seen.

*spinuli- MESEMBRYANTHEMUM, foliis semi tere-
ferum tibus, papuloso - chrystallinis, stipulis
(54) spinulescentibus.

Spinulescent fig-marygold.

Native of

Introduced

Flowers

A new species.

OBSERVATIONS.

I BELIEVE this is intirely a new and most distinct species, I have no specimen of it proper for description, and as the specific character given above was formed from a very small slip of it, it will in all probability admit of considerable amendment from those who have an opportunity of describing the perfect plant, which is very scarce.

*carneum MESEMBRYANTHEMUM foliis lineari
(55) sub-teretibus, floribus dichotomis.

Flesh-coloured flowered fig-marygold.

Native

Introduced

Flowers September

A new species.

OBSER-

OBSERVATIONS.

PLANT, diffuse, becoming shrubby by age.

BRANCHES, yellowish green, decumbent cylindrical, covered with oblong, chiefly sunk papulæ, at first herbaceous, but finally woodyish.

LEAVES, opposite, distinct, nearly linear, cylindric, gross, somewhat flattened on the upper side towards the base, and when quite full grown very slightly bowing back, and rather attenuate each way.

FLOWERS, those upon the specimen before me, pale flesh colour or pale salmon colour, smallish, not in the least showy, growing in a dichotomous kind of a panicle, and opening in the middle of the day.

PEDUNCLES, cylindric gross, thickening upwards.

CALYX, large, covered with larger and more elevated papulæ than the other parts of the plant, five cleft, segments nearly equal, three longer, and somewhat membranaceous at the edges; two shorter, and destitute of membranes, taking the shape of the leaves.

PETALS, just longer than the calyx,
outer

outer ones linear, broadish, flesh coloured; inner ones gradually shorter, narrower and paler, some of them partaking of the nature of the filaments.

FILAMENTS, rather few, white, converging, short, of different lengths.

ANTHERÆ, fine yellow, pollen yellow.

GERMEN, roundish urn shaped.

STYLES, five, short, erectish, yellow.

CAPSULE, five cell'd, fleshy.

SEEDS, I have not seen.

ADDITIONAL OBSERVATIONS.

IN some respects this plant almost seems to agree with the *M. papulosum* of the supplementum plantarum of the younger Linnæus, which is the *M. Aitonis* of Jacquin; indeed I should almost have been tempted to think them the same, had they not differed in the following particulars.

THE *M. papulosum* is described as a biennial plant, with spathulate oblong leaves, according to the supp. plant, and with ovate spathulate ones, according to Mr. Aiton's Hort. Kew.

WHEREAS, my *carneum* has a shrubbyish stem when old, and linear sub-cylindric leaves.

splendens

splendens **MESEMBRYANTHEMUM** foliis semiteretibus impunctatis recurvis distinctis congestis, calycibus terminalibus digitiformibus.

Species Plantarum, 689.

Syst. Veg. Lich. Soc. 1. 383.

Syst. Nat. Gmel. tom. 2. 844.

Ait. Hort. Kew. 2. 180.

Hill's Hort. Kew. 154.

Weston's Nurseryman, 1. 168.

Weston's Cat. 161.

Steel's Essay, 60.

Mesembr. 37. *Rand's Chelf.* 133.

Mesembr. 31. *Mill Gard. Dic. ed.* 7.

Shining fig-marygold.

Native of the Cape of Good Hope.

Cultivated 1716, *Ait. Kew.*

Flowers June to August.

OBSERVATIONS.

I HAVE seen this plant flower, but have no good specimen for description.

PEDUNCLES, (in the plants I saw bloom,) solitary, short, and terminating the branches.

CALYX, five leaved, or five parted ; segments, blunt, large and long, three with large membranaceous edges, two nearly cylindrical, rather longer, destitute of membranes, very blunt, and resembling the leaves of the plant.

O

FLOWERS,

FLOWERS, whitish, not showy or large.

*fastigia- MESEMBRYANTHEMUM foliis subcylindricis patentibus, apice sub-recurvis, tum. calycibus laciniis sub-æqualibus, (57)

Fastigate fig-marygold.

Native of

Flowers August to October.

A new species I believe.

OBSERVATIONS.

THIS plant I am informed has been named fastigiatum, by Mr. Lee, from whose nursery it went to a gentleman's collection under that name, why he named it so I do not know.

I ONLY know the plant from a small specimen, (possibly not a very perfect one,) which I shall describe, as soon as I have observed that the plant is very closely allied to the last described species, the splendens Lin. and to the next mentioned one, the *reflexum*, a plant, which I have been told was introduced into this country and named reflexum, by Dr. Pitcairn.

FASTIGIATUM at present, appears intermediate and may be distinct, but, although I rank it as a species in my list, I dare not assert it to be specifically distinct from reflexum, until I have seen the latter flower.

FASTI-

FASTIGIATUM is abundantly distinct from *splendens*, in its calycine leaves, which are almost regular, and not half so large as those of *splendens*; it is also a less plant, and has less leaves, but, in what sufficient particulars, *reflexum* differs from *fastigiatum*, I am almost at a loss to explain; it however appears a taller, more erect and twiggy plant, with leaves having a much greater tendency to bend back, not only at the points, but from the middle.

DESCRIPTION.

ROOT, perennial, fibrous, branched.

PLANT, shrubbyish, branched, only just capable of supporting its heavy crop of leaves in an erect posture.

BRANCHES, when growing in the open air, very numerous and short, almost covered with leaves.

LEAVES, very opaque, without visible punctures, growing much crowded on the branches, green, or pale glaucous green, varying considerably in shape, according to the degree of warmth or cold they are exposed to; (a variation all *Mesembryanthea* are subject to, and which I would always have my readers keep in mind,) in the open air in the summer time, they are cy-

lindric subtriquetrous, or semicylindric. In the house when drawn, they grow remotish from each other, less cylindric, and even channelled above from their bases to their points; in all states attenuate both ways, with a slight tendency to curve back at the points.

FLOWERS, the size of a shilling, when expanded, of a whitish ground colour, tinged with saffron, opening in a forenoon.

PEDUNCLE, only one on the specimen before me, cylindrical or very obscurely angular, and rather thickening upwards, covered, as is the calyx, with extremely minute papillæ.

CALYX, five cleft, segments nearly equal, acutish, two plain, three with membranaceous edges, in which respect it differs from splendens, the calyx of which has five unequal parts, some of which are very large, long, blunt, and foliaceous, that is, resembling the leaves on its branches.

PETALS, very numerous, linear, and very narrow, of different lengths, the innermost gradually shortest, partaking of the nature of the stamina, and terminated with white, half formed unfertile antheræ, the outer petals white at the base, tinged with saffron above.

FILAMENTS,

FILAMENTS, numerous, of different lengths, white.

ANTHERÆ, yellow, pollen yellow.

GERM, ovate, very juicy.

STYLES, five, stout, erect, subulate, longish, greenish; stigmata simple, suffus'd in the greatest profusion of yellow pollen.

CAPSULE, five cell'd.

SEEDS, I have not seen.

*reflexum MESEMBRYANTHEMUM foliis oppositis,
(58) distinctis semicylindricis, supra sub-canaliculatis, arcuato-reflexis; ramis papillofis sub-virgatis, papillis minutis.

Reflex'd leav'd fig-marygold.

Nat.

Introduced by Dr. Pitcairn in

A new species I believe.

OBSERVATIONS.

THIS plant is said to have been introduced into this country by Dr. Pitcairn, and named reflexum by him.

IT appears a slenderer plant, with more erect-expanding branches than either splendens or fastigiatum, above described.

BRANCHES, erect, expanding, arising axillary and in pairs from the bosoms of

the leaves, crossing each other, and communicating to the plant a handsome somewhat pyramidal form.

LEAVES, more inclining to bow back from about the middle, of a slenderer and more semicylindric form, more channell'd above, and somewhat more glaucous, than either those of *splendens* or *fastigiatum*.

FLOWERS, I have not seen, and therefore I dare not assert the plant to be specifically different from *fastigiatum*, (to which it seems nearer allied than to *splendens*,) although out of respect to the name, which was given it by Dr. Pitcairn, I rank it as a species in the margin.

THIS description is taken from a plant which has stood in a light well-aired greenhouse all the summer, and is now growing before me; it is in a 60 sized pot, two feet high, somewhat pyramidal, straight and handsome; slender, yet strong in the main stem, with numerous erect-expanding, twiggy, stiff, and brittle branches, from six inches to a foot long.

geniculi-
florum
(59)

MESEMBRYANTHEMUM, foliis semiteri-
tibus papulosis, floribus sessilibus axil-
laribus, calycibus quadrifidis.

Species Plant. 1. 688.

Syst.

Syst. Veg. Lich. Sec. 1. 382.

Syst. Nat. Gmel. Tom. 2. 844.

Ait. Hort. Kew. 2. 180.

Hill's Hort. Kew. 154.

Weston's Nurseryman, 1. 168.

Weston's Cat. 161.

Steel's Essay, 60.

Mesembr. 38. Rand's Chelf.

Mesembr. 3. Mill. Dic. ed. 7.

Ficoides capense folio tereti flore albido Pet. Gaz, t. 78. f. 3.

Ficoides Neapolitana, flore candido Boerhaave's Index alter Pl. Lug. Bat. pars 1. p. 291.

Joint flowering fig-marygold.

Native of the Cape of Good Hope.

Flowers June to September.

OBSERVATIONS.

PLANT, whilst young, herbaceous, but becoming shrubby by age.

BRANCHES, decumbent, or if near supporters, almost scandent, divaricating whilst young, cylindric, of a tender and herbaceous nature, and covered with minute pimples, and a dark green, thick, fleshy, or perhaps rather pulpy bark, when old, becoming somewhat ligneous, and assuming various flexuose and contorted directions.

LEAVES, mostly opposite, not always so, especially on the flower bearing

branches; smooth, cylindric, channell'd, convex, or rounded below, and concave or channell'd above, and minutely pimpled.

FLOWERS, yellowish, white, small, making a poor appearance.

PEDUNCLES, very short and thick, solitary, remote, one flowered, usually arising from the alae of the leaves, but sometimes terminating the branches, and finally causing a jointed or elbow-like appearance on the stem, whence Linnæus's name geniculiflorum. They are in truth axillary, and being solitary, occupy the axilla of one leaf only of every pair of floriferous leaves, the opposite of which, although it produces no flower like its mate, must not be called barren, for it is in fact, ultimately the most prolific and fruitful of the two, by almost invariably giving birth to, and producing a short divaricating shoot, which forms a continuation of the geniculate and zigzag stem, which, at its first joint, produces another flower and another shoot, similar to itself, and endowed with similar prolific powers, and so on in a manifold series.

THIS is rather an uncommon habit of growth in this family, although closely followed

followed and imitated by the *M. canaliculatum* of these OBSERVATIONS, and in a less degree by the *M. pallens* of Aiton's Hortus Kewensis, which formerly also went by the name of *canaliculatum*; and the habit of my *carneum* is somewhat upon the same plan.

BUT to return to the peduncules of *M. geniculiflorum*, they are at first terminal, but cease to be so as soon as the opposite leaf protrudes from its maternal axilla the nascent rudiments of the future branch, which, in its turn, produces other branches, and other flowers, in an increasing chain.

THUS do the leaves opposite the flowers, although barren themselves of *flowers*, furnish fertile and floriferous *branches*; so vigorous are the powers of life in this quick growing plant; which, however, in conformity to one of my maxims explained before, I have not seen produce one prolific seed, not even in the most favourable situations.

CALYX, studded with larger papillæ than any other part of the plant, quadrifid, lacinia, unequal, two, large, foliaceous, channell'd above;—two lesser subcylindric, with edges somewhat membranaceous.

PETALS,

PETALS, dull, yellow-white, linear, very narrow, some entire, others end nick'd.

FILAMENTS, numerous, white.

ANTHERÆ, yellow, sub-didymous, and large for the size of the flower, pollen, yellow.

GERM, when cut longitudinally with a sharp pen-knife, appearing elegantly urn shaped, with a crown or rising at the apex, and a representation of the ear like processes on each side of an urn.

STYLES, four short, of an herbaceous colour.

CAPSULE, fleshy, finally semitransparent, (in which it resembles canaliculatum of these OBSERVATIONS,) four angled, naviculate at top.

SEEDS, few, nestling in pulp, and so far as I have examined, all abortive.

R E M A R K S.

STRIKES root readily from the young shoots; with difficulty from the old; apt to lose its leaves from a bad state of health, and when in that condition, looking quite like a different plant.

canalicu- **MESEMBRYANTHEMUM** foliis canalicu-
laturum latis lineari-semiteretibus, papulis splen-
(60) dentibus; apice sub-recurvis floribus
dichotomis; capsulis, pellucidis.

Channell'd

Channell'd fig-marygold.

Native

Introduced

Flowers July to October.

A new species.

OBSERVATIONS.

I BELIEVE this is entirely a new species ; I have seen it in several collections, but not at Kew ; I have seen it in Dr. Swainston's Collection at Twickenham, where it is called pendulum ; who gave it so vague a name, I know not ; it is enough, if I say the character is too common to all the lax shooted Mesembryanthema, to be received and continued, when a better and more distinguishing one is to be had.

I MIGHT have formed a pretty apt and expressive name from the semitransparency of its pulpy capsule, a character by no means common in this extensive family ; but I decidedly give the preference to the term canaliculatum, as a character always present to one, however excellent, which is only observable when the plant is in seed.

DESCRIP.

DESCRIPTION.

ROOT, perennial, branched, and fibrous.

PLANT, when old, of a shrubby nature.

STEMS, much branched, prostrate or trailing, if near the ground; pendulous from a shelf, like all other lax shooted *Mesembryanthema*, herbaceous and round, when young; becoming woody and shrubby by age; young branches, and every young part of the plant, except the semi-transparent capsule, beautifully studded, with large, spangling, chrystalline papulæ.

LEAVES, opposite, distinct, when mature, linear semi-cylindric, channelled above, from the base to the point, but blunt; at the very point, bending more or less backward. In a very luxuriant plant I once observed a few of the leaves slightly alternate.

FLOWERS, produced in a somewhat dichotomous order, numerous, dilute, reddish, about the size of those of *hispidum*, opening about the middle of the day, and continuing open some hours.

PEDUNCULES, round, thickening upwards.

CALYX, usually five cleft, but sometimes

times only four cleft, segments unequal, generally three of them, sometimes only two, foliaceous; that is, like the leaves of the plant; the others with membranaceous edges, with terminating foliaceous subulate points.

PETALS, numerous, the outer series linear, reddish, some end-nick'd, some intire, the inner series narrower, shorter, paler, intire, some of them partaking of the nature of the stamina, having unfertile half-formed antheræ at their points.

FILAMENTS, numerous, whitish.

ANTHERÆ, yellow, pollen yellow.

GERMEN, fig-form, lucid, or semi-transparent; with grooves or slight channelled lines.

STYLES, usually five, sometimes only four, long, buff-coloured, with recurving points; stigmata simple.

CAPSULE, beautiful, ficiform, and exceeding smooth, lucid and semi-transparent, its cells and grooved lines or channels answering to the number of styles; never more than five, nor fewer than four.

SEEDS, few, while yet nestling in the fleshy cells of the vegetating and almost diaphonous capsule, small, brown, and visible to the eye, through the

the semi-transparent pulpy fluid which surrounds them.

villosum MESEMBRYANTHEMUM foliis pubescentibus connatis impunctatis caule piloso.
(61)

Species Plantarum, 692.

Syst. Veg. Lich. Soc. 1. 383.

Syst. Nat. Gmel. Tom. 2. 846.

Ait. Hort. Kew. 2. 184.

Hill's Hort. Kew. 254.

Weston's Nurseryman, 1. 169.

Weston's Catal. 162.

Steel's Essay, 61.

Mesembr. 16. *Mill. Dic. ed.* 7.

Villous leav'd fig-marygold.

Native of the Cape of Good Hope.

Cult. by Mr. Ph. Miller; see *Mill. Dic.* above quoted.

Flowers in July.

OBSERVATIONS.

PLANT, pilose, decumbent, or prostrate, finally shrubby.

STEMS, or branches, arising in distant pairs, (which cross each other) from the axillæ of the leaves, cylindrical, decumbent, or almost prostrate; whilst young, herbaceous and green, becoming shrubby with age; and covered with the permanent cylindrical pilose

pilose vaginæ of the connate leaves; whose hairs are not very thick set, but short, white, and rather pressed to the stem; some of them expanding, but pointed upwards.

LEAVES, less fleshy or succulent than those of any other *Mesembryanthemum*, opposite, connate, but appear distinct, without they are attentively examined, (many *Mesembryanthema* having as much claim to the term connate-leaved as this, the juncture being formed by the thin sheaths, not the bases, of their leaves; being truly perfoliate as well as vaginate, when united there, as in *veruculatum*) leaves being as it were a continuation of the pilose sheaths, linear, scarcely papulose, or if so, the papulæ are extremely minute, shining in the sun, and of a dark green colour; canaliculate above, with a convex or rounded keel, slightly attenuate both ways, rather dilating again at the very base, and embracing the stem, where they are quite destitute of succulency or pulp, and slightly membranaceous at the edges, with a white midrib, visible in no other part of the leaf,—the membrane at the base is ciliate-pilose, the rest of the leaf nearly smooth, or scattered

tered on both sides with distant small white hairs.

FLOWERS, solitary, terminating the fertile branches which point upwards, and are rarely seen, opening to a very warm sun only, in the forenoon.

PEDUNCLES, cylindrical.

CALYX, six-leaved, leaves broad at the base, lessening to an acutish point, acquiring in the inside a purplish tinge, and resembling a flower; not fleshy but firm.

PETALS, none at all, in the plant I saw flower.

FILAMENTS, numerous, slender.

ANTHERÆ, I think whitish.

GERMEN,	} I did not cut in pieces my specimen to investigate.
STYLES,	
STIGMAS,	
CAPSULE,	
SEEDS,	

ADDITIONAL OBSERVATIONS.

THE above description of the parts of fructification I must not omit to mention is from memory only, for I have mislaid my specimen, which I intended to have described very minutely; and which was procured from Mr. Curtis's Botanic Garden at Brompton, where the plant flowered very well last July.

THIS

THIS is a singular plant in its family, and not truly, or at least not closely, allied to any species I am acquainted with, and very rarely produces flowers; neither Lin. in Sp. Pl. nor Mr. Aiton in Hort. K. mention having seen them.

SOME Mesembryanthema differ exceedingly in their parts of fructification from others; few more so than this in its calyx, and being destitute of petals, and perhaps in its capsule.

MESEMBRYANTHEMUM apetalum, although nearly destitute of petals, is not so much allied to this plant, as to the other annual species. How much the polygynous species differ from the regular pentagynous ones, which are true Mesembryanthema!—Some have only four celled capsules and four segments in the calyx, whilst a few have flowers with six or seven calycine leaves or clefts;—some have linear equal cylindric laciniae to their smaller calyces;—others have large, broad, unequal, foliaceous segments, to capacious calyces!—Whilst a few have the inner petals not only of a different colour to the outer, but of a different structure, being of a nature between the stamina and petals, operating somewhat like a nectarium, or the fringe like processes in passiflora, and by
P excluding

excluding from the sight, protecting the converged up antheræ; as in *M. radiatum*.

MANY species have erect filaments, some have expanding filaments, and a few have visible filaments, closely converged, (without any inner petals compressing them,) like a cylindric button in the center of the flower, as is well seen in *deflexum* Ait. Kew.

How far some of these differences in the parts of fructification, when other circumstances are detected to corroborate and strengthen them, may be thought sufficient to break down this bulky, and I will add difficult genus into lesser families, and thereby facilitate the investigation of its component individuals, is not perhaps the province of a young Botanist to determine, at least it would ill become me to decide.

cornicula- MESEMBRYANTHEMUM foliis imbricatis
tum longis equalibus, mollibusque punc-
(62) tatis, basi semicylindricis, apice semi-
cylindrico triquetris

Mesembr. 31. *foliis corniculatis longioribus,*
Rand's Chels. who gives the following
synonym.

Ficoides afr. folio longissimo nonnunquam den-
ticulato flore luteo, Herm.

Mesembr.

Mesembr. 36. *Mill. Dic. ed. 7.* who gives the following synonym.

Ficoides africana humifusa, folio triangulari longiore glauco flore flavescente Tourn. Acad. R. Par. 1705.

M. corniculatum α . *Spec. pl.* 697.

M. corniculatum α . *Syst. Nat. Gmel. tom. 2.* 846.

M. corniculatum, α . *Ait. Kew. 2.* 192.

Weston's Nurseryman, 1. 171. *M. corniculatum* 1.

Weston's Cat. 162. *M. corniculatum* 1.

Lin. in Sp. pl. gives the following synonym.

Ficoides capensis, folio triangulari, flore luteo intus, pallido, Pet. Gaz. t. 77. f. 10, which figure I have examined, but (not having seen the real flower) can say little about it.

Long leaved horned fig-marygold.

Native of the Cape of Good Hope.

Cultivated in England 1727. *Ait. Kew.*

Flowers March to May. *Ait. Kew.*

OBSERVATIONS.

ROOT, fibrous, fibres variously branched.

PLANT, when young appearing herbaceous, acquiring by age exceeding short shrubby angular stems, which are densely covered with long, equal, connate, vaginate, imbricate leaves.

BRANCHES, in the specimens before me, which I have for *corniculatum* of Lin. (but not in flower,) numerous and densely set, arising alternately from the axillæ of the crowded leaves, and extremely short when compared with those of *diversiphyllum*, (*corniculatum* β : Lin.)

LEAVES, glaucous green, equal, oppositely connate, vaginate, and embracing the stem slightly at the base, and pretty densely imbricate, each pair crossing the other somewhat obliquely; on their very first appearance growing together like the beak of a small bird, then expanding, and finely recurving back, with points inclining upwards; generally semicylindric at the base, and semicylindric triquetrous at the points, tapering upwards, and ending in a fine, short, harmless, white, cartilaginous bristle; punctate, but not roughly so, being much softer to the touch than those of *diversiphyllum*, which is described as having scabrous punctures.

PEDUNCLES, flowers, &c. I never saw.

diversi-
phyllum

(63)

MESEMBRYANTHEMUM foliis ramorum remotis, connatis inequalibus, scabridopunctatis, semicylindrico-triquetris, caule prostrato, elongato, petalis subtus rubris.

Mesembr. foliis corniculatis brevioribus Rand's *Chels.* 133.

Mesembr.

Mesembr. 35. *Mill. Gard. Dic. ed.* 7.

M. corniculatum, β . *Lin. Sp. pl.* 697.

M. corniculatum, β . *Gmel. Syst. Nat. tom.* 2.
846.

M. corniculatum, β . *Ait. Hort. Kew.* 2. 192.

M. corniculatum, *Weston's Nurseryman*, 1.
171.

M. corniculatum breve *Weston's Cat.* 162.

Ficoides 6. *afra folio triangulari, longissimo,*
marginibus obtusioribus, flore amplo, intus
pallido aureo extus Linea rubra longa picta,
Boerb. Ind. Alt. Hort. Lug. Bat. Pars.
1. p. 289.

Short leaved horned fig-marygold.

Native of the Cape of Good Hope.

Flowers March to October.

OBSERVATIONS.

ROOT, fibrous, branched.

BRANCHES, numerous, prostrate if on
the ground, pendulous from a shelf,
angular and long, alternate, remote,
and arising from the axillæ of the
leaves.

LEAVES, perfoliate, of various lengths,
some of them extremely long, others
very short, covered with roughening
punctures; semicylindric-triquetrous
terminating in a white point, or short,
harmless, cartilaginous bristle, and
often marked with a rather elevated line,

extending upwards, from the inner base; much firmer to the touch than those of *corniculatum* Lin. those on the branches remote from each other.

PEDUNCLES, terminating the trailing branches, two or three inches long, nearly cylindrical, of an equal thickness, smoothish, yellowish green, and furnished with a pair of bracteal leaves about the middle, resembling those of the branches, but shorter, subulate, and membranaceous at the base.

FLOWERS, large, of a bright shining yellow within, reddish without, opening in a morning.

CALYX, large, funnel shaped, very deeply five cleft, dark green, very roughly punctate; punctures, those on the lower part resembling little opaque tubercles, those on the points of the segments rather rough, but pellucid. Segments nearly equal, all of them very broad below, two of them rather larger than the others, with rather longer triquetrous foliaceous points, the third, like the two last, but a little shorter, and somewhat membranaceous on one side; the remaining two, resembling the third, with very acute points, and both sides edged with a thin broad membrane of a darkish colour.

PETALS,

PETALS, largish, some intire, others end nick'd, of a fine shining yellow colour within; outwardly mark'd with very dark reddish or purple coloured, broad streaks, looking as if painted.

FILAMENTS, numerous, of different lengths, deep yellow or saffron coloured, rather converg'd.

ANTHERÆ, smallish for the size of the flower, oblong, pale.

GERM, much depressed, lenticular, or plano-convex on both sides, or nearly hæmispherical, marked with numerous angular ribs, yellowish green.

STYLES, very numerous, about seventeen, about the eighth of an inch long, expanded, subulate, buff coloured, not smooth.

CAPSULE, depressed, nearly hæmispherical, many celled, very full of watery juice between the decay of the flower, and ripening of the seed.

SEEDS, few, lodged in about seventeen pulpy cells, very small.

ADDITIONAL OBSERVATIONS.

I THINK this plant is almost as nearly allied to my tricolorum as to corniculatum. Witness the structure of all its parts and habit, but more particularly its calyx, capsule and polygynous

flowers; there is however an abundant specific difference in the shape of the leaves.

DIVERSIPHYLLUM, principally differs from *corniculatum* Lin. in its elongated trailing branches, and its distant, firm, roughly punctate, unequal leaves, and reddish petals.

CORNICULATUM Lin. having very short, or somewhat abbreviated branches, densely crowded with imbricating, soft, equal, smoothly punctate leaves, and straw coloured petals.

THE fructification of *corniculatum* Lin. which I have not seen, may possibly exhibit other differences.

loreum **MESEMBRYANTHEMUM** foliis semicylin-
(64) dricis, recurvis congestis, basi interi-
ore, gibbis, connatis, caule pendulo

Lin. Sp. Pl. 694.

Syst. Veg. Lich. Soc. 1. 384.

Syst. Nat. Gmel. Tom. 2. 845.

Ait. Hort. Kew. 2. 189.

Hill's Hort. Kew. 155.

Weston's Nurseryman, 1. 170.

Weston's Cat. 162.

Steel's Essay, 61.

Mesembr. 32. *Rand's Chelf.*

Leathery stalk'd fig-marygold.

Native of the Cape of Good Hope.

Cultivated

Cultivated in England in 1732, Ait. K.
Flowers.

OBSERVATIONS.

I BELIEVE I never saw the plant Linnæus means, although I have seen what Nurserymen call loreum, which is my diversiphyllum; they would perhaps be somewhat nearer the mark, if they sold either corniculatum or my tricolorum for it, particularly the latter, which however is abundantly distinct from loreum, in its unequal calycine leaves, and polygynous tri-coloured flowers.

*tricolorum (65) MESEMBRYANTHEMUM foliis longissimis, connatis cylindricis, caule procumbente angulato, floribus polygynis.

Three coloured fig-marygold.

Native

Introduced

Fl. Oc. and Nov.

A new species.

DESCRIPTION.

ROOT, perennial, fibrous.

PLANT, when young, herbaceous, becoming woody with age.

BRANCHES,

BRANCHES, very long, trailing, if on the ground, but pendulous from a shelf, and angular.

LEAVES, when full grown, several inches long, almost as thick as a goose-quill, opaque, and perfectly cylindrical, connate, or perfoliate; at the very points blunt, but slightly attenuate, marked above with two parallel feint lines.

FLOWERS, opening about noon, beautiful, being as large as those of aureum, and of three distinct and contrasted colours, viz. the bright straw colour of all the upper part of the petals; the rich sanguineous purple of their bases; and the fine brown of the antheræ.

PEDUNCLES, terminating the trailing branches, and arising from the axæ of the upper leaves, long, compressedly cylindrical, and of an equal thickness to the very calyx.

CALYX, five cleft, segments unequal, punctate, three of them membranaceous on the edges, and short; two exceeding long, especially on their first appearance, with dilated flat bases, and subulate foliaceous points.

FILAMENTS, numerous, erect-patent, of a bright sanguineous purple colour.

ANTHERÆ, of a fine brown colour, oblong, nicked at both ends, pollen, brown.

PETALS,

PETALS, very numerous and linear, of various lengths, outermost the longest, some of them end nicked, but they are chiefly intire, and of a bright straw colour upwards, with rich sanguineous-purple marks near their bases.

GERMEN, broad, hæmispherical, flat.

STYLES, in the specimen before me, extremely numerous, more so than in any *Mesembryanthemum* I am acquainted with, being about twenty, united below, expanded, short, subulate, compressed, and brownish buff, or green coloured.

CAPSULE, nearly hæmispherical, with cells, in all probability answering to the number of the styles, but I did not investigate that point, because I did not care to spoil my specimen, by cutting its capsule across.

SEED, I have not seen.

I BELIEVE this plant to be intirely new, it is very scarce, and nearest allied to *loreum*, from which I conceive it principally to differ in its strictly cylindric leaves, unequal calyx, very narrow yellow petals, brown antheræ, and polygynous flowers.

LOREUM, according to Linnæus, in *Sp. Pl.* 694, having a semicylindric leaf, an equal calyx, purple linear, lanced petals,

petals, white stamina, and (as nothing is said to the contrary, we may suppose,) few styles.

*elonga-
tum
(66)

MESEMBRYANTHEMUM foliis longissimis
glaucis sub-teretibus subulatis, basi in-
teriore canaliculatis floribus sub-de-
cagynis.

Long white leav'd fig-marygold.

Native of

Introduced

Flowers July to October,

A new species.

OBSERVATIONS.

THE following description of this plant, which I consider as a new and most distinct species, I wish to mention, is taken from a somewhat hasty examination of a growing plant in his Majesty's Garden at Kew, of which I was not allowed to take a specimen home, on account of the Managers being out, when I solicited the favour of one.

DESCRIPTION.

Root, from the appearances near the bases of the stems, I almost conjecture to be somewhat tuberous.

STEMS, few, lax, trailing on the ground, and finally pretty long.

LEAVES,

LEAVES, opposite, very glaucous or even white and long, rather attenuate at the points, nearly cylindrical, with a kind of channell'd line or hollow on the upper side, extending from the base to near the middle.

PEDUNCLES, cylindrical, appearing merely a continuation or elongation of the fertile stems, so that the upper leaves should seem to be of the nature of bracteal leaves; they are more distant, and much shorter towards the calyx, near which the peduncle is naked for some inches.

FLOWERS, solitary, extremely large and specious, of a pale yellow, or sulphur colour, terminating the somewhat flexuose fertile stems, and opening in a morning.

PETALS, numerous, of various lengths, innermost shortest, and partaking of the nature of the filaments; outermost longest and linear; from the middle downwards, ciliate with flexuose down, a circumstance observable in the petals of no other *Mesembryanthemum* I have hitherto had the opportunity of investigating.

FILAMENTS, extremely numerous, and capillary.

ANTHERÆ,

ANTHERÆ, exceeding small for the size of the flower.

GERMEN, large, marked, with about ten ribs or lines, of a flat shape, or between hæmispheric and conic.

STYLES, ten, very small for the size of the flower, terminated by thickening stigmata.

CAPSULE, ten ribb'd, for it can scarcely be called ten angled, hæmispherical-conic, with cells, in all probability answering to the number of its styles.

R E M A R K.

Its styles and capsules should seem to point out an affinity with *Mesembryanthemum pugioniforme*.

*semicy-
lindricum
(67)

MESEMBRYANTHEMUM foliis connatis, longis, semicylindricis papulosis, apice attenuatis obliquis, junioribus sub-ciliato-pubescentibus.

Semicylindric fig-marygold.

Native of

Introduced

A new species.

O B S E R V A T I O N S.

I HAVE no other than a very small plant of this *MESEMBRYANTHEMUM*, from which

which I have formed the above specific character, and have somewhat further to remark.

PLANT, so far as I have seen, herbaceous, or with very short, soft, gross, and succulent branches, arising from the axillæ of the leaves.

LEAVES, connate, vaginate, somewhat crowded, semicylindric and attenuate (often obliquely so) at the points, succulent, gross, and turgid, soft to the touch, and very brittle, full of watery pulp, covered with a thin skin of a deep green colour, and marked with large pale papulæ; the younger ones less, sometimes ciliate-pubescent towards the upper parts of their edges; all the leaves appear to have a tendency to assume unequal lengths and shapes.

FLOWERS, I have not seen.

THIS plant may perhaps hereafter prove more a kin to *crassifolium*, or rather (from the succulency of its not exactly equal, oblique leaves) to *difforme*, than *loreum*, &c.

tenuifolium
(68)

MESEMBRYANTHEMUM foliis semiteretibus subulatis glabris distinctis, internodio longioribus.

Lin. Spec. Plant. 693.

Syst. Veg. Lich. Soc. I. 384.

Syst.

Syst. Nat. Gmel. Tom. 2. 846.

Ait. Hort. Kew. 2. 186.

Hill's Hort. Kew. 154.

Weston's Nurseryman, 1. 170.

Weston's Cat. 162.

Steel's Essay, 61.

*Mesembr. 33, tenuifolium procumbens flore
coccineo, Rand's Chelf.*

Mesembr. 22. Mill. Gard. Dic. ed. 7.

*Ficoides seu ficus aizoides : africana folio longo
tenui, flore rubro, Bærb. Ind. alt. Hort.*

Lug. Bat. pars 1. p. 291.

Slender leav'd fig-marygold.

Native of the Cape of Good Hope.

Cultiv. 1700. Ait. Kew.

Fl. June to Sept. Ait. Kew.

OBSERVATIONS.

I HAVE seen this plant flower, but have obtained no specimen proper for description.

IN many stages of growth, it is very liable to be taken for bicolorum, and my spiniforme.

M. TENUIFOLIUM frequently emits roots from the joints of its stems, and thereby becomes a reptant plant.

*spiniforme MESEMBRYANTHEMUM, foliis, oppositis
(69) subcongestis cylindraceis, apice attenuatis sub-spiniformibus, ramis, erectis lignosis.

Thorn

Thorn shaped leaved fig-marygold.

Native of

Introduced

Flowers

A new species.

OBSERVATIONS.

THIS is a new species, whose flowers I have not seen, it is allied to *bicolorum*, and in some respects looks like *tenuifolium*; from the latter it differs abundantly in its erect, firm, and woody stems; and from the former in its strictly cylindric leaves, and firmer shoots, which strike root with very great difficulty; whereas those of *bicolorum* root with remarkable ease.

I HAVE obtained no specimen proper for particular description, and never saw its flowers.

bicolorum MESEMBRYANTHEMUM foliis subtri-
(70) tris subulatis scabrido-punctatis, pedunculis nudis, papuloso-scabridis corollis luteis.

Mesembr. foliis subtriquetris scabris corollis bicoloribus, Lin. Sp. Plant. 485, which Syn. (not having that edition of Sp. Pl. myself) I take from Mill. Dic. ed. 7. *Mesembr. 28*, who gives the following apparently right synonym of this plant.

Q

Ficoides

Ficoides capensis frutescens, folio tereti punctato, petalis luteis Bradley's Succ. 1. p. 8. F. 7.

Mesembr. 28. Mill. Gard. Dic. ed. 7.

Mesembr. bicolorum, foliis subulatis levibus punctatis distinctis, caule frutescente, corollis bicoloribus, Sp. pl. ed. 1764, p. 695, is my *coccineum*, as appears by the words, *foliis subulatis levibus*, &c. and by some of the synonyms adduced; — why Linnaeus should alter the specific character of his *bicolorum* so much in two editions of his Sp. pl. is difficult to account for, unless we naturally suppose he first described the real *bicolorum* with roughly punctate leaves, and afterwards described my *coccineum*, (which has leaves smoothly punctate, and is very closely allied to his first, and therefore true *bicolorum*,) and believed them the very same.

The fine Fig. of Bot. Mag. p. 59, is my *coccineum*, as appears by the deep red-orange coloured flowers, smoothish leaves, and smoother based peduncles, furnished with leaves which answer to bractæ, by not emitting shoots from their axillæ, as the uppermost leaves of *bicolorum* constantly do, even before the flowers are expanded; which shoots are sometimes as long as the roughening peduncles themselves.

Mesembr.

Mesembr. fruticescens flore croceo, Rand's
Chelf. 133, which is taken from *Dill.*
Elth. Tab. 202, which figure I have seen,
 and believe it belongs to this plant from its
scabrous-punctate leaves, and nearly naked
peduncules.

Pale yellow two coloured fig-marygold.

Native of the Cape of Good Hope.

Introduced

Flowers June to October.

OBSERVATIONS.

THE following is a description of bico-
 lorum, contrasted with coccineum,
 from living specimens, now lying be-
 fore me.

BRANCHES, woody, firm, stouter than
 those of coccineum, finally forming a
 larger plant, covered with a much
 paler brown bark, opposite or often
 alternate, whilst young ancipitous,
 becoming cylindrical rather sooner than
 those of coccineum.

LEAVES, very long, subtriquetrous, sub-
 ulate, roughly punctate, often longer
 and greener than those of coccineum;
 which are usually slightly glaucous,
 shorter than those of bicolorum, se-
 micylindric, compressed, with obtuse
 keels, punctate and smoothish.

Q₂

FLOWERS,

FLOWERS, on their first appearance, terminating the young branches, but soon rendered axillary from the early and constant protrusion of new branches from the bosoms of the uppermost leaves, yellow within, tinged purple without towards the tips, opening in the morning. Whereas those of coccineum for the most part, terminate the younger branches, (the uppermost leaves being much shortened and blunter than the lower, answering the offices of bractæ, rarely furnishing young axillary shoots,) and have constantly deep sanguineous orange coloured petals.

PEDUNCLES, constantly naked, (the uppermost leaves being as long as most of the other leaves of the plant, and constantly emitting young shoots, about the length of the peduncles from their axillæ,) the peduncles are almost cylindrical, or nearly of an equal thickness throughout, covered with rough punctures, and shorter than those of coccineum; which are polished or very smooth, and attenuate at the base, more inclining to be angular than those of bicolorum, somewhat slenderer, and often tinged brown, and thickened considerably upwards, with roughish punc-

punctures near the calyx, and bracteal leaves about the middle, which are the upper leaves of the fertile branches, rendered of the nature of bracteal leaves, by being shorter and blunter than those below, and very rarely furnishing shoots from their axillæ.

CALYX, five cleft, segments unequal, two long, semicylindrical, subulate; three shorter, broader with membranaceous edges, all the segments with very rough punctures at their bases. The calyx of *coccineum* is less than that of *bicolorum*, five cleft, segments not quite equal, but (in my specimens at least,) more so than in *bicolorum*, two rather longer than the other three, subulate, flat, plain, and dilated at the bases, the other three rather shorter and broader with membranaceous edges; all the segments covered at the bases with roughish punctures.

PETALS, numerous in both plants; in *bicolorum* yellow within, slightly keel'd without, with a purple tinge from about the middle upwards to the points, which are intire and acute;—in *coccineum* the petals within are of a glittering deep sanguineous orange colour, rather broader, blunter, and

flatter than those of *bicolorum*, some of them slightly end nick'd at the points, with a tendency to be revolute on the sides, the petals on the outside, are rather paler than on the inside, with a tinge of purple.

FILAMENTS, in both plants numerous and expanding, yellow in *bicolorum*, orange in *coccineum*.

ANTHERÆ, yellow and pollen yellowish in both plants.

GERM, ficiform in both.

STYLES, five in both, smaller and yellower in *bicolorum* than *coccineum*.

CAPSULE, ficiform, and five cell'd in both.

SEEDS, I have not seen.

SUCH are the differences of the two plants before me, which after all are scarcely enough to form two species sufficiently distinct.

bicolorum SMALL yellow two coloured fig-mary-
minus gold.

I saw this plant at Mr. Lee's by this name, but as I only saw it over a tan pit, and had no specimen of it, I can say but little about its characters, it appeared somewhat more than half the size of the common *bicolorum*, in its leaves, had yellow flowers, and seemed as if it was intermediate between

tween the common bicolorum and spiniforme, and distinct from coccineum.

coccineum MESEMBRYANTHEMUM foliis semicylindrico-compressis carinis obtusis, pedunculis sub-bracteatis, basi levigatis, petalis coccineis.

(71)

Mesembr. bicolorum foliis subulatis lævibus punctatis distinctis, caule frutescente, corollis bicoloribus, Lin. Sp. Pl. ed. 1764, p. 695.

Mesembr. bicolorum, Syst. Veg. Litch. Soc. 384.

Mesembr. bicolorum, Syst. Nat. Gmel. 847.

Mesembr. bicolorum, Curt. Mag. 59. good, but coloured too pale, and best representing a plant which has flowered in warmth, those flowering in the open air in summer, are less elongated, with shorter bracteal leaves, and higher coloured flowers.

Mesembr. bicolorum, foliis subulatis triquetris, punctatis distinctis, caule frutescente, corollis bicoloribus, flore intus aureo, foris purpureo, Weston's Nurseryman. 1. 171.

Deep red fig-marygold,

Native

Introduced

Flowers June to October.

OBSERVATIONS.

AFTER the full description I have given of coccineum under the account of bicolorum, it is unnecessary to say much more about it here; but as the former is, if not a new, at least an overlooked plant, and a very beautiful one, I have drawn up the following particulars of it.

DESCRIPTION.

PLANT, shrubby, and some little slenderer in all its parts than bicolorum.

BRANCHES, alternate, or often opposite, whilst young ancipitous, finally cylindrical, and covered with a much darker coloured bark than those of bicolorum.

LEAVES, opposite, punctate, (punctures nearly smooth) not so long as those of bicolorum, and often more inclining to glaucous, of a shape somewhat femi-cylindric, and somewhat compressed on the sides, with rounded or obtuse keels, and bluntish, not subulate points.

FLOWERS, of a deep sanguineous orange colour on their first opening, fading a little afterwards; not rendered axillary by the protrusion of young branches from

from the bosoms of the uppermost leaves as in *bicolorum*, but for the most part terminal, owing to the uppermost and shortened leaves, rarely sending out branches from their axillæ, but, being unfertile, and answering the offices of bractææ.

PEDUNCLES, cylindrical, often coloured, or very slightly angular, slenderer than those of *bicolorum*, at the base attenuate and polish'd, or very smooth; above, close by the calyx, thickened and punctate, punctures rather rough, but not so rough or large as in *bicolorum*.

ABOUT the middle of the peduncles arise two opposite leaves, shorter than those on the branches, more sharply keel'd, and blunter; they are the uppermost leaves on the fertile branches, and being barren of shoots answer the offices of bracteal leaves.

CALYX, five cleft, segments nearly smooth, not quite equal, but more so than in the specimens of *bicolorum* before me; three segments broader, shorter with membranaceous edges; two rather longer, narrower, subulate, but flattish and dilated at their bases. The calyx is less than that of *bicolorum*, and less roughly punctate at the base.

PETALS,

PETALS, exactly as described under those of *bicolorum*, and about the same length, much surpassing the diameter of a halfpenny applied to the expanded flower.

FILAMENTS,
ANTHERÆ,
GERMEN,

} as described under *bicolorum*.

STYLES, five smaller, shorter and yellower than those of *bicolorum*.

CAPSULE, ficiform, five cell'd.

SEEDS, I have not seen.

ADDITIONAL OBSERVATIONS.

Thus I have got through the tedious descriptions of these two closely allied plants, which I shall possibly be censured for separating.

When in bloom, *bicolorum* is at once known by its yellow flowers; *coccineum* by its deep orange coloured ones.

When past bloom, the unfertile bracteal leaves investing the peduncles of the latter, point it out from *bicolorum* in the same situation, which has at that time considerable shoots in the bosoms of its uppermost leaves.

When seen before the appearance of flowers, I know no surer marks of distinguishing the two plants than the paler

paler bark, longer and rougher leaves, and robuster shoots of bicolorum, which are to be perceived by viewing the two plants together, when nearly equal in age and health.

COCCINEUM, has by far the handsomest flowers, which in old plants are very numerous, and make a most beautiful appearance, particularly when contrasted with the yellow and rubicund flowers of their kindred.

noctiflo- **MESEMBRYANTHEMUM** foliis semicy-
rum lindricis impunctatis distinctis, flori-
(72) bus pedunculatis, extus phæniceis,
calicibus quadrifidis.

Mesembr. noctiflorum. Sp. pl. 689.

Mesembr. noctiflorum. Gmel. Syst. Nat. tom. 2. 844.

Mesembr. noctiflorum foliis semicylindricis impunctatis, distinctis, calycibus quadrifidis, floribus pedunculatis intus candidis extus phæniceis odoratissimis. Weston's Nurseryman. 1. 168.

Mesembr. noctiflorum 1. Weston's Cat. 161.

Mesembr. 39. noctiflorum, flore intus candido extus phæniceo, odoratissimo, Rand's Cbel. 133.

Mesembr. 4. foliis semicylindræis, floribus quadrifidis. Mill. Gard. Dic. ed. 7.

Ficoides, seu ficus aizoides, Africana, erecta arborescens lignosa, flore radiato, primo purpureo,

*purpureo, dein argenteo, interdiu clauso,
noctu aperto. Boerb. Ind. alt. Hort. Lug.
Bat. pars. 1. p. 291.*

Purple night flowering fig-marygold.
Native of the Cape of Good Hope.
Cultiv. 1714, Ait. K.
Fl. June to August.

OBSERVATIONS.

THIS plant flowers abundantly in July and August, but I have no specimen proper for description.

ALTHOUGH I have often seen the flowers of this plant in bud, and when past bloom, I never had the opportunity of beholding them at the critical juncture of expanded perfection; nor have I as yet been able to learn from others, with any precision, their hour of opening or unfolding, which is said to be later than that of all other *Mesembryanthema*.

strami-
num
(73)

MESEMBRYANTHEMUM, foliis semitere-
tibus falcatis, caule arborecente, flo-
ribus extus stramineis.

Miller's Gard. Dic. ed. 7, Mesembr. 5.

Mesembr. noctiflorum, B. Sp. pl. 689.

*Mesembr. noctiflorum, B. Syst. Nat. Gmel,
Tom. 2. 844.*

Mesembr.

Mesembr. noctiflorum 2. *floribus intus candidis; extus stramineis, odoratissimis, Weston's Nurseryman, 1. 168.*

Mesembr. noctiflorum 2. *stramineum, Weston's Cat. 161.*

Mesembr. 40. flore intus candido, extus stramineo odoratissimo, Rand's Chelf. 133.

Ficoides afra, arborescens; folio tereti, flore, candido, noctu aperto, interdiu clauso. Boerb.

Ind. Alt. Hort. Lug. Bat. pars 1. p. 291.

Straw coloured night flowering fig-marygold.

Native of the Cape of Good Hope.

Introduced

Flowers

OBSERVATIONS.

I HAVE never seen this plant flower, and have taken it up as a species, from the 7th ed. of Miller's Dictionary. The specific characters (except the three last words) are the characters of Miller, and therefore of an experienced Botanist, and a man of judgment, whose names and distinctions I have taught myself to revere.

BOTH Boerhaave and Dillenius, the only originals I have to cite, appear to have considered it as specifically different from the *noctiflorum* of Lin.—My own opinion

opinion on the subject (was it of any weight) is not to be had, for I have not seen enough of the two plants to judge.

brachia- MESEMBRYANTHEMUM, caulibus foliif-
tum que cylindricis papulosis, ramis tri-
(74) chotomis.

Ait. Hort. Kew. 2. 191.

Syst. Nat. Gmel. Tom. 2. 847.

Three-forked fig-marygold.

Native of the Cape of Good Hope, Mr.
Fr. Maffon, Ait. K.

Introd. 1774, Ait. K.

Fl. July and Aug. Ait. K.

OBSERVATION.

THIS plant is very scarce; I have seen it, but have no specimen proper for description—it is a branched divaricating shrub,

læve MESEMBRYANTHEMUM foliis cylindra-
(75) ceis obtusis amplexicaulibus levibus,
calycibus quinquefidis, laciniis ob-
longis obtusis.

Ait. Hort. Kew. 2. 187.

Gmel. Syst. Nat. Tom. 2. 845.

Upright white wooded fig-marygold.

Native of the Cape of Good Hope, Mr.
Fr. Maffon, H. Kew.

Introduced.

Introduced 1774, Ait. K.

Fl. July to Sept. Ait. K.

OBSERVATIONS.

I HAVE seen this plant, but have no specimen proper for description—it is a shrub.

grossum (76) MESEMBRYANTHEMUM, foliis subcylindricis confertis papulosis, caudice basi incrassato ramis diffusis glabris.

Ait. Hort. Kew. 2. 191.

Syst. Nat. Gmel. Tom. 2. 847.

Gouty fig-marygold.

Native of the Cape of Good Hope, Mr.

Fr. Masson, Ait. K.

Introduced 1774, Ait. K.

Flowers August—October, Ait. K.

OBSERVATION.

I HAVE seen grossum, but I have no proper specimen for description.

stipula-
ceum (77) MESEMBRYANTHEMUM foliis semicylindrico-compressis incurvatis, punctatis distinctis congestis, basi marginatis.

Spec. Plant. 693.

Syst. Veg. Lich. Soc. 384.

Syst. Nat. Gmel. Tom. 2. 845.

Ait. Hort. Kew. 2. 187.

Hills

Hill's Hort. Kew. 154.

Weston's Nurseryman, 1. 170.

Weston's Catal. 162.

Steel's Essay, 61.

Mesembr. 44, *frutescens flore purpureo rariore*, *Rand's Chelf.* 133.

Upright shrubby fig-marygold.

Native of the Cape of Good Hope.

Cult. 1732, Ait. K.

Flowers June to October.

OBSERVATIONS.

THE following is a description of a young growing plant, about a foot high;—the flowers I have seen this season at Kew, but have no specimen in flower to describe.

DESCRIPTION.

ROOT, perennial, fibrous, furnished with innumerable divaricating ramifications.

PLANT, upright, woody, and firm, growing to as large a size as any *Mesembryanthemum* I have seen, except maximum.

BRANCHES, arising from the axillæ of the leaves, opposite, erect-expanding, crossing each other in pairs, and beset thickly with young leaves on their first outset, and whitish or glaucous, but finally

finally covered with a brownish bark, shorter and shorter upwards, forming a beautiful pyramidal glaucous plant, well covered with fine leaves.

LEAVES, when full grown, from two to three inches long, slightly curving upwards or falcate, very glaucous, crossing each other in pairs, punctate, distinct, but nearly embracing the stem, of a shape semicylindric, compressed, with a blunt keel, or, subtriquetrous, with the bottom or keel angle very blunt, slightly tapering towards the point, which is not acute.

FLOWERS, terminating the principal stems, large, showy, and purple.

***purpureo-** **MESEMBRYANTHEMUM** foliis connatis,
croceum semicylindrico-subtriquetris, obtusis ;
 (78) calycibus quinquefidis, laciniis duabus
 exterioribus, longis, foliiformibus, tri-
 bus interioribus, brevioribus, mem-
 branceis.

Purple and saffron fig-marygold.

Native of

Introduced

Flowers August to October.

A new species.

OBSERVATIONS.

THIS is the plant which is called by the vague name of *fucculentum*, at Hammer-smith.

WHEN I considered the whole genus *MESEMBRYANTHEMUM* consisted of such numerous species, all of them more or less *fucculent*, it was a sufficient inducement to frame a better name for this plant, than that of *fucculentum*; which I trust I have done, although in a compound term. The specific name of *purpuro-croceum* is alone capable of distinguishing this plant from all its congeners, which I have seen flower, the petals on their first opening, being of a lovely bright purple, which quickly fades to a saffron-yellow.

THE term *mutabile*, which it is said Mr. Lee has applied to another species, that might have admitted the name *marginatum* very well, would have admirably suited this plant; but names of plants, although unprinted ones, I am by no means for having changed wantonly, and without benefit to the cause of Botany—which it has been, is, and shall be, my feeble endeavour to advance.

DESCRIP.

DESCRIPTION.

ROOT, perennial, fibrous-branched.

PLANT, branched, succulent when young, shrubby when old.

BRANCHES, opposite and alternate, arising from the axillæ of the leaves, nearly cylindrical, weak and smooth, at first glaucous, succulent, herbaceous, and ascending; finally becoming woodyish and firmer, but they do not support themselves in an erect posture.

LEAVES, opposite, connate, or almost perfoliate, for their sheaths cover the branches, and remain after they decay; very glaucous, softish, and rather gross, but not near so much so, as those of *veruculatum*; punctate; between semicylindric and subtriquetrous, with blunt keels and points.

FLOWERS, large and showy, of shortish duration; on their first appearance, terminating the branches; afterwards most of them are rendered axillary by the protrusion of new shoots, from the alæ of the upper leaves; of a deep lovely bright purple on their first opening, but soon fading to a saffron colour,—whence my trivial name.

PEDUNCLES, in my specimens solitary, of a moderate length, glaucous, and rather compressed.

CALYX, very glaucous, five cleft, segments unequal; the two outer ones long and foliaceous, that is, resembling the leaves of the branches; the three inner ones shorter, with membranaceous edges.

PETALS, numerous, linear, but broadish, paler without than within, of a lovely bright purple when first expanded; soon fading to a saffron colour.

STYLES, and the internal parts of the flower, I did not cut up my specimens to investigate.

verucula-
tum
(79)

MESEMBRYANTHEMUM foliis cylindricis subtriquetris acutis connatis, arcuatis, impunctatis distinctis.

Spec. Plant. 696.

Syst. Veg. Lich. Soc. 1. 384.

Syst. Nat. Gmel. Tom. 2. 847.

Ait. Hort. Kew. 2. 192.

Hill's Hort. Kew. 155.

Steel's Essay, 61.

Weston's Nurseryman, 1. 171.

Weston's Cat. 162, erroneously spelled **VERUCULATUM**, and as erroneously translated "WARTED leaved ficoides."

Mesembr. 36. foliis veruculiformibus, floribus melinis umbellatis, *Rand's Chels.* 133.

Mesembr. 33. foliis subcylindricis acutis connatis arcuatis levibus, *Mill. Dic. ed.* 7.

Ficoides

Ficoides afra, *arborescens folio tereti, glauco,*
apice-purpureo crasso, Boerb. Ind. alt.
Hort. Lug. Bat. pars 1. p. 291.

Spit leav'd fig-marygold.

Native of the Cape of Good Hope.

Introd. 1732, Ait. K.

Flowers May and June.

OBSERVATIONS.

I HAVE no proper specimen of this plant
in bloom, for description.

THE flowers are yellowish and small,
produced by aged plants only; nume-
rous, forming a kind of crowded co-
rymbus, and terminating the stoutest
branches of the plant.

molle (80) MESEMBRYANTHEMUM foliis triquetris
connatis erectis glaucis impunctatis,
ramis femiteretibus, pedunculis axil-
laribus compressis.

Ait. Hort. Kew. 2. 192.

Syst. Nat. Gmel. Tom. 2. 846.

Soft fig-marygold.

Nat. of the Cape of Good Hope. Mr.
Fr. Maffon, Ait. K.

Introduced 1774, Ait. K.

Flowers

OBSERVATIONS.

THIS plant was first described in that
most useful book the Hortus Kewensis

of Mr. Aiton, from which the above specific character and synonym were taken, and from whence Professor Gmelin. (the second so far as I know who notices it) appears to take up the plant, as a species.

OF the specific character I have to observe, that it may possibly be amended by the following alteration.

M. MOLLE ramis sub-angulatis foliis sub-comnatis, patentibus, incanescens, sub-triquetro-turgidis, angulis obtusis lineatis punctatis.

THE following is a description of the leaves and branches of *M. molle* from a young plant about eight inches high.

ROOT, fibrous, branched, perennial.

PLANT, a shrub, variously branched.

BRANCHES, usually opposite, sometimes alternate, arising from the axillæ of the leaves; at first herbaceous, compressed or ancipitous, and expanding; afterwards becoming rounded and more horizontal; and finally, quite round; woody, firm, and covered with a loose brown bark.

ALL plants which have young ancipitous shoots, become more or less round shooted when old; I have seen this take place even in the Opuntian division of the genus *Cactus*, (whose apparent

rent leaves are analogous to shoots) and in the angular, succulent, aphyllous *Euphorbiæ*.

LEAVES, erectish, when young; expanding, or expanded, when full grown;—when aged often reflected;—when young, appearing scarcely connate;—when old, quite connate, but only slightly so;—when very old, often as if amplexicaul connate; very dull glaucous, or rather hoaryish, or incanescant and soft to the touch, with a thickish skin, which does not let out the juice readily when the leaf is bruised, by pressure; impunctate; (punctures large, paler than the rest of the leaves) subtriquetrous, very turgid on all sides, but most so above, with very blunt angles, marked by moniliform lines of semitransparent or lucid contiguous punctures; the leaves are blunt, but have a fine white almost imperceptible point, best observed on the youngest leaves.

FLOWERS, I have not seen.

I HAVE heard this plant called *Mesembryanthemum pubescens* at Mr. Lee's.

IN other places I have often heard the *Crassula mollis* of Mr. Aiton's *Hortus Kewensis* (a plant very much like *M. molle*, in its leaves and shoots) called

by the name of *Mesembryanthemum pubescens*.

*cymbi- MESEMBRYANTHEMUM foliis brevis,
forme compresso-sub-triquetris, obtusis sub-
(81) cymbiformibus.

Boat leaved ficoides.

Native of

Introduced

Flowers

A new species.

OBSERVATIONS.

I HAVE seen a plant of this *Mesembryanthemum*, which I believe came from Mr. Lee's, by the name of *Mesembryanthemum falcatum majus*, a common hackney'd name that I have heard applied to many distinct species of *Mesembryanthemum*, particularly the present one, *M. decumbens* (of Miller, and of these observations) and *M. glomeratum* Lin.

DESCRIPTION.

THE plant I saw is about a foot high, branched and shrubby.

BRANCHES, opposite, very short, crossing each other in pairs, and arising from the axillæ of the leaves, compressed, or ancipitous when young, rounder when

when old ; and covered with a loose pale brown bark.

LEAVES, short, small, fleshy glaucous and punctate, nearly distinct ; on old and unluxuriant plants very short, a pair of them just before expansion, putting on a shape between oval and sphæroidal, which no other Mesembryanthemum but this puts on, (that I have seen,) and which almost tempted me to name the plant sphæroidium. The expanded leaves are subtriquetrous, compressed, with blunt angles and points, and a keel gibbous, or rounded, or contracted inwards at each end, which gives the leaf, (if not luxuriant,) a cymbiform, or boat like shape, whence any trivial name.

FLOWERS, I have not seen.

pulverulentum MESEMBRYANTHEMUM foliis cylindricis subtriquetris, obtusis, scabrido-punctatis, punctis pulverulentibus.

(82)

Pulverulent or dusty fig-marygold.

Native of

Introduced

Flowers

A new species.

OBSER-

OBSERVATIONS.

THIS is the plant which is called pulverulentum at Mr. Lee's, a name not very well adapted to the plant, nor yet altogether unexpressive.

DESCRIPTION.

ROOT, perennial, fibrous.

PLANT, shrubbyish, upright.

BRANCHES, (as appears by a small sprig before me,) opposite, arising from the axillæ of the leaves, and crossing other very prettily in pairs; when young compressed, and covered with shining chrystalline papulæ.

LEAVES, shortish, obtuse, opposite when young, nearly distinct, brittle, greenish, and covered with roughning small chrystalline papulæ; when old and not drawn weak by warmth, of a shape between cylindric and subtriquetrous, turgid, with excessively blunt or rounded angles, and blunt points; expanding and covered with close set regular well defined roughish incanescant impunctations, looking somewhat like fine shagreen or fish skin; each of which impunctations when viewed in the microscope, appears to be a congeries

geries of lesser, but distinct spots, a peculiarity I have found no other *Mesebryanthemum* to possess.

FLOWERS, I have not seen.

• specio-
sum
(83)

MESEMBRYANTHEMUM foliis semicylin-
drico-subtriquetris, supra planiusculis,
obtusis, subincurvato-cornutis, juniori-
bus, caulibusque, papuloso-spendenti-
bus.

Shining specious fig-marygold.†

Native of

Introduced

Flowers August.

A new species.

OBSERVATIONS.

As THIS plant is sold by Mr. Lee under the name of *speciosum*, and a little known by that term, I have thought it better to continue it, although the term *cornutum*, from the bending upwards of the leaves in healthy strong plants, like a pair of little horns, might perhaps have been full as applicable; for we must not, (if we love the cause of Botany,) wantonly change the known name of a plant, because we merely happen to think of a better, as I have somewhere seen well remarked.

I HAVE

I HAVE no specimen of this plant proper for description.

It is almost too nearly allied to micans, but had in the plant I saw incurving leaves, representing a pair of little horns, and the leaves were smoother than those of micans, with much smoother stems.

FLOWERS, larger than those of micans, somewhat of the same colour and more showy.

micans (84) MESEMBRYANTHEMUM, foliis subcylindricis papulosis distinctis, caule scabro.

Spec. plant. 696.

Syst. Veg. Lich. Soc. 1. 384.

Syst. Nat. Gmel. tom. 2. 847.

Ait. Hort. Kew. 2. 190.

Hill's Hort. Kew. 2. 155.

Weston's Nurseryman, 1. 171.

Weston's Cat. 162.

Abercr. Bott. Arr. 2. 654.

Steel's Essay. 61.

Mesembr. 34, micans flore phæniceo, filamentis atris, *Rand's Chelf.* 134.

Mesembr. 30. foliis subulatis subcylindraceut papillofis distinctis, caule scabro, *Mill. Dic.* ed. 7.

Ficoides capensis teretifolio flore croceo. *Pet.*

Gaz. t. 7. *f.* 9. refer'd to by Lin. must be an error of the press in omitting the figure of 8 after 7, for I believe *t.* 78. *fig.* 9. is the plant.

Glittering fig-marygold.

Native of the Cape of Good Hope.

Cultivated 1750 by Mr. Ph. Miller.

Flowers June to August.

OBSERVATIONS.

MESEMBRYANTHEMUM micans has distant expanded papulose shining leaves, a roughened slender, but firm, woody, very much branched stem, and large shewy very dark orange coloured flowers, which open in a forenoon, and cut a splendid figure. I regret that I have not been able to procure a recent specimen of *M. micans* in flower for description.

micans pallidus. This is a variety of *micans*, rather less in all its parts than *micans*, with a much paler and smaller flower; some call it *micans minus*.

I HAVE had no opportunity of examining it, and once fancied it was the same as *speciosum*, above described, I also fancied it might be the same as the next plant mentioned in these OBSERVATIONS, which I have named *maculatum*; but on considering the subjects, and comparing small specimens of them together, I am inclined to think they are all distinct; for *maculatum* has very short, horizontally

zontally expanded, smaller, and less rough leaves than micans, and branches not to be called roughened but rather maculated.

* macula- MESEMBRYANTHEMUM, foliis patenti-
tum bus obtusis compresso-semicylindricis,
(85) caule maculato, erecto.

Spotted stalked fig-marygold.

Native of

Introduced

Flowers

A new species.

OBSERVATIONS.

OF this plant I have only a small specimen without any flowers; it appears closely allied to micans and speciosum, and may possibly prove no other than what I have heard called micans minus, which however I think it is not, but the poorness of my specimens deters me from deciding.

DESCRIPTION of M. maculatum.

PLANT, shrubby, upright, woody.

BRANCHES, forming distant joints, opposite, arising from the axæ of the leaves, and crossing each other in pairs; very slender, but firm, woody, cylindrical, scarcely

scarcely to be called rough, (as is the case in *micans*,) but rather maculated after the manner of *Phlox maculata*; whence my trivial name.

LEAVES, opposite, very distinct, smoothish, and remote or distant from each other. The young ones expanding;—the old ones often horizontally expanded, short, semicylindrical, with a very blunt keel; or often compressedly semicylindrical, and slightly channell'd above, rather hoaryish and opake, in some shades; but when viewed in a strong light, shining with very minute papillæ, particularly when young.

FLOWERS, I never saw.

ADDITIONAL OBSERVATIONS.

THE above description, I must not omit to say, was drawn from a small young specimen (gathered in October) about four inches long only, which was produced by a plant about two feet high, which had stood in the open air all the summer, and was not housed at the time the specimen was gathered.

tuberosum MESEMBRYANTHEMUM foliis subulatis
(86) papulosis distinctis apice patulis, radice capitata.

Spec. Plant. 693.

Syst.

Syst. Veg. Lich. Soc. 1. 383.

Syst. Nat. Gmel. Tom. 2. 845.

Ait. Hort. Kew. 2. 186.

Hill's Hort. Kew. 154.

Weston's Nurseryman, 1. 170.

Weston's Cat. 162.

Abercr. Bot. Arr. 2. 652.

Steel's Essay, 61.

Mesembr. 41. *Rand's Chelf.* 133.

Mesembr. 21. *Mill. Dic. ed.* 7.

Tuberous rooted fig-marygold.

Native of the Cape of Good Hope.

Cult. 1714, Ait. K.

Flowers June to October.

OBSERVATIONS.

MESEMBRYANTHEMUM tuberosum forms a low, very much branched, and spreading shrub, and when old, has an exceeding large swelled, or tuberous root, partly protruded above the surface of the ground; in which respect it differs amazingly from the fibrous œconomy of all its congeners.

Its flowers are produced plentifully every summer, of a pale or dilute red colour, and are smaller than those of any of the other shrubby species, which I have seen bloom, except perhaps the little white flowers of *M. tenellum*, of these

OBSERVATIONS.

I HAVE

I HAVE no recent specimen of *M. tuberosum* proper for description.

tuberosum I HAVE seen the young shoots of the *M. blotched tuberosum* produce several blotched or slightly variegated leaves occasionally, towards the latter part of summer, which gave the plants a pretty appearance, but were by no means permanent, although, it is very probable, such blotched shoots, if they had been taken properly from the plants, struck in a poor rubbishy soil, and treated after the manner recommended by Dr. Hill,* might have been converted into a lasting variegated variety; for something like this was the origin of that beautiful striped variety of *Sempervivum arboreum*, which decorates so many of our greenhouses in the winter season, with its green and silvery leaves.

PECULIARITIES.

THUS it appears the *M. tuberosum* occasionally exhibits three peculiarities no other shrubby *MESEMBRYANTHEMUM* assumes; viz. first, a tuberous root; second, the smallest flowers; third, blotched leaves.

* Hill's Eden, 691.

brevifo-
lium
(87)

MESEMBRYANTHEMUM, foliis cylindra-
ceis, obtusissimis papulosis patentibus,
ramis diffusis.

Ait. Hort. Kew. 2. 188.

Syst. Nat. Gmel. Tom. 2. 845.

Short leav'd fig-marygold.

Native of the Cape of Good Hope, Mr.
Fr. Maffon, *Ait. K.*

Introduced 1774, *Ait. K.*

Flowers July to October.

OBSERVATIONS.

ROOT, perennial, fibrous; fibres nume-
rous, small.

PLANT, a slender branched woody shrub,
two or more feet high.

BRANCHES, divaricating, cylindric; when
young, greenish, and covered with
chrystalline papulæ; when old, smooth,
wiry-ligneous, and slender, covered
with a brownish coloured bark.

LEAVES, in old plants, which are not
rendered luxuriant by moisture, very
short and numerous, distinct, cylin-
dric, and extremely blunt; whilst
young, very slightly incurved;—when
old, expanded, and pointing four ways,
in all states shining with very minute
papillæ.

FLOWERS, solitary, bright-reddish-pur-
ple, resembling those of *M. glomera-*
tum,

tum, terminating the little short lateral branches of unluxuriant plants, and expanding in the forenoon.

PEDUNCLES, short, cylindric, covered with small spangling papillæ.

CALYX, five cleft, segments nearly equal, two plain, and destitute of membranes; three with membranaceous edges; all of them covered with small shining papillæ.

FILAMENTS, very numerous, purple, expanding, and of different lengths.

ANTHERÆ, buff coloured, pollen, buff.

GERM, five angled.

STYLES, five, largish for the size of the flower, sulphur coloured.

CAPSULE, swelling above the intire part of the calyx; where it is deeply five angled, each angle with a grooved line down the back, marking the points in which the ripe capsule is to open or divide. Cells five.

SEEDS, numerous, very small.

R E M A R K S.

THE old firm shoots of *M. brevifolium* are struck with difficulty from cuttings, but the young and tender ones, most readily.

brevifo-
lium
longum

MESEMBRYANTHEMUM brevifolium puts on very different appearances, according to the different age and treatment it receives. I have seen plants of it growing in the full ground in the summer time, at the foot of a dry south wall, and in poor soil, with leaves as long as those of hispidum, and which measured an inch and an eighth in length, and were of a shape nearly semicylindrical; the young shoots of the plants were covered with pilefcent papulæ, which pointed downwards, and looked in a microscope like minute hooks of glass or ice.

WHEREAS the leaves of brevifolium, when not luxuriant, rarely measure a quarter of an inch; at least such was the case with fine flowering plants at Kew, early in October last, which had been out all the summer, and were then unhoufed, and had young shoots covered with small chryftalline papillæ; but the papillæ were by no means pilefcent.

THIS difference in the leaves and shoots is merely the effect of soil and situation, not even forming a variety; but it is extremely puzzling to those who are young in the study of this extensive genus.

hispidum

hispidum MESEMBRYANTHEMUM, foliis distanti-
 (88) bus cylindricis, caule hirsuto, calycibus
 glabris papulosis; staminibus purpu-
 rascentibus.

Mesembr. hispidum, Sp. Pl. 691.

Mesembr. hispidum, Syst. Veg. Lich. Soc. 1.
 383.

Mesembr. hispidum, Syst. Nat. Gmel. tom.
 2. 845.

Mesembr. hispidum, α. Ait. Hort. Kew. 2.
 184.

Mesembr. 18. hispidum, pilosum micans, fo-
 liis cylindricis pilosis distinctis caule his-
 pido, flore saturante purpureo, Weston's
 Nurseryman, 1. 169.

Mesembr. hispidum, 1. Weston's Cat. 162.

Mesembr. 51. pilosum micans, flore saturanter,
 purpureo, Rand's Chelf. 134.

Mesembr. 15. caule hispido, foliis cylindra-
 ceis deflexis, Mill. Gard. Dic. ed. 7.

Ficoides afra, fructicosa, caule lanugine ar-
 gentea ornato folio tereti, parvo longo,
 guttulis argenteis quasi scabro, flore viola-
 ceo; Boerb. Ind. alt. Hort. Lug. Bat.
 pars 1. p. 291.

Purple flowered bristly stalked fig-
 marygold.

Native of the Cape of Good Hope.

Introduced

Flowers most part of the year.

OBSERVATIONS.

ROOT, fibrous, branching every way, and quickly filling a small pot with radicles, which consume much water for a succulent plant.

PLANT, a low divaricating shrub.

BRANCHES, numerous, cylindrical, at first upright, afterwards incapable of supporting themselves; bending downwards in various divaricating directions; covered with white scattered short hairs, pointing different ways; whilst confined in a pot, never attempting to take root at the joints. But if planted in the full ground in summer, the branches extend themselves, two or three feet in length, trail upon the ground (keeping their youngest shoots only in an erect posture) and in some instances become reptant, by striking roots from their joints, into the soil they are in contact with.

LEAVES, opposite, rather distant, cylindrical, of equal thickness to the very points, and sometimes flattish above; covered with roughish chrystalline papulæ, and looking like a piece of shagreen.

FLOWERS, shewy, of a very deep bright purple

purple colour, opening in a morning, pretty numerous in large plants, making a fine appearance.

PEDUNCLES, arising from the alæ of the uppermost branches and leaves, cylindrical, very long, slender and thickened above, and covered with stradling or divaricating white hairs, which gradually disappear near the calyx, by becoming extremely short chrystallizations, or pilefcent papulæ.

CALYX, smooth, covered with beauteous spangling papulæ, five cleft, segments nearly equal, obtuse, convex on the outside, concave on the inside, adorned with chryftalline papulæ.

PETALS, fewer than in some Mesembryanthema, linear-lanced, sometimes intire, sometimes with one or more indentures at the points.

STAMINA, filaments purple, of different lengths.

ANTHERÆ, buff colour, pollen, buff.

GERM, deeply five-angled, angles blunt.

STYLES, five, small, greenish.

CAPSULE, deeply five-angled, five celled,

SEEDS, numerous, small.

hispidum Pale flowered bristly stalked fig-mary-
pallidum gold.

Mesembr. hispidum, β. *Spec. Pl.* 691.

Mesembr. hispidum, β. *Syst. Nat.* Gmel.

Tom. 2. 845.

Mesembr. hispidum, β. *Ait. Hort. Kew.* 2.
184.

Mesembr. hispidum, pilosum micans flore purpureo pallidior, *Weston's Nurseryman*, 1.
169.

Mesembr. hispidum purpurascens, *Weston's Cat.* 162.

Mesembr. 52. pilosum micans, flore purpureo pallidior, *Rand's Chelf.* 134.

OBSERVATIONS.

I AM not sure that I have seen this plant; unless perchance it is the same as the plant which Mr. Lee sells by the name of *hispidum humile*, which I believe to be a distinct species, and in these OBSERVATIONS have named *hirtellum*.

striatum MESEMBRYANTHEMUM foliis cylindraceis, caule hispido; pedunculis, calycibus, lanuginosis.

(89)

Mesembr. hispidum, γ. *Sp. Pl.* 691.

Mesembr. hispidum, γ. *Syst. Nat.* Gmel.

Tom. 2. 845.

Mesembr. hispidum, γ. *Ait. Hort. Kew.* 2.
184.

Mesembr.

*Mesembr. hispidum, pilosum micans, flore
purpureo striato, Weston's Nurseryman, 1.
169.*

*Mesembr. hispidum striatum, Weston's Cat.
162.*

*Mesembr. 53. pilosum micans flore purpureo
striato, Rand's Chels. 134.*

Striate bristly stalked fig-marygold.

Native of the Cape of Good Hope.

Introduced

Flowers most part of the year.

OBSERVATIONS.

I BELIEVE this plant, which is the *M. hispidum* with striate flowers of authors, to be specifically distinct from the *hispidum* of Linnæus, and have therefore placed it in the posture of a species, rather than that of a variety in these OBSERVATIONS, under the trivial name of *striatum*, which is not only expressive of one of the most striking and permanent features of the plant, viz. its striate flowers, but keeps up the name the plant has usually been handled by.

It might have been named *pilosum*, a term applied to it by Dillenius, as well as to the *M. hispidum* and *M. hispidum* β of Linnæus; and therefore equally belonging

longing to the three; on which account I rejected it, for being almost the only one in its family with striate flowers, (except *bellidiflorum*, and perhaps some others which I have not seen bloom) it becomes the term *striatum* extremely well. The term *lanuginosum* is applied by Boerhaave, in his *Index Alter Hort. Lug. Bat.* to one or two of the Linnæan varieties of *hispidum*, which I do not much admire; for the plants are rather covered with hairs than wool.

M. STRIATUM is to be distinguished very readily from *M. hispidum* Lin. by the peduncles and calyces when present, whether green or withered; and by the face of the plant itself, when those more striking parts are wanting.

THE peduncles and calyces in *striatum* are very densely covered (more so than the branches of the plant) with woollyish hairs, particularly the calyces.

BUT the uppermost parts of the peduncles of *hispidum* Lin. and every part of the calyces, are not only destitute of hairs, but adorned with large spangling chrystalline papulæ.

IN *striatum* the leaves are covered with much rougher papulæ than those of *hispidum* Lin.

THE stems and branches of striatum are usually covered with longer and much thicker set hairs than those of hispidum Lin. which has its branches beset with shorter, often whiter, and more straggled hairs than those of striatum.

AND lastly, striatum is rather the robustest plant of the two, with stouter branches, and bolder flowers, which I had almost forgot to mention, are composed of striate broader, and denser disposed petals than those of hispidum Lin. which has slenderer deep bright purple (flore saturunter purpureo Dill.) petals, set more straggling or separate, and I think fewer in number than those of striatum.

IF I had possessed any recent specimens of striatum, I should have described them regularly and minutely, but I trust the above contrasted account, will at all times be sufficient, to distinguish the M. hispidum Lin. from my striatum.

M. STRIATUM opens its gay striate flowers in the forenoon, is very often in bloom, and as the flowers are pretty numerous, they make a fine appearance when expanded, but are handsomer the first time of opening than afterwards,

wards, for they lose their gayest colours long before they fade quite away. On their first appearance they are much like those of *M. bellidiflorum*, and not altogether unlike those of *M. forficatum*.

I THINK Linnæus in Spec. Pl. 691. must be wrong in placing the following synonym to this plant,—*Ficoides s. ficus aizoides africana folio longo tenui flore aurantio*, Brad. Succ. 4. p. 13. t. 35.--at least if the synonym is rightly applied, (as from Linnæus's investigation of Bradley's fig. which I have not seen, it ought to be,) at least I say, Bradley's character of the plant does not become it, but rather expresses *M. aureum* Lin. or my *coccineum*.

*hirtellum MESEMBRYANTHEMUM foliis confertis
(90) sub-cylindricis, obtusissimis, papuloso-incanescens, caulibus pedunculisque hispidis, calycibus chrysellinis genitalibus flavescentibus.

Dwarf bristly stalked fig-marygold.

Native

Introduced

Flowers July to October.

OBSERVATIONS.

A NEW species, unless perchance it may be the same as the plant which, in
Rand's

Rand's Chelf. is called *Mesembryanthemum micans*, pilosum flore purpureo pallidior, which I am inclined to think it is not ; Rand's plant was so named by Dillenius, and is the hispidum β . of Linnæus, and hispidum pallidum of these OBSERVATIONS, and a plant which I have had no fair opportunity of investigating.

THERE is another synonym before me which may belong to this plant, but I dare not say it does, I mean

FICOIDES, afra, fruticosa, caule lanuginoso ; folio tereti, parvo, brevi, guttato, flore violaceo, Boerh. Ind. alt. Hort. Lug. Bat. Pars. 1. page 291.

DESCRIPTION.

ROOT, perennial, fibrous, much branched.
PLANT, a much lower shrub than hispidum, more compact and dense.

BRANCHES, much shorter, and more covered with crowding, shorter, and smoother leaves than those of hispidum, so much so, as to be scarcely visible in healthy undrawn plants ; when the young branches are visible, they are covered with short white recurving hairs.

LEAVES, the full grown ones, slightly incurving, nearly cylindrical, but not so

so compleatly so as those of hispidum, the youngest almost semicylindrical, all the leaves blunt, much shorter than those of hispidum, and more smoothly covered with hoarish shining chrystalline papulæ, opposite, crossing each other in pairs, and where the plant is not drawn with heat, densely crowded or imbricated on the young branches, covering them almost from the sight; whereas those of hispidum are neither crowded nor imbricate, but remote from each other when compared with those of hirtellum.

THE leaves of hispidum are covered with rather prominent chrystalline papulæ and are deep green.

THOSE of striatum are covered with prominent very rough, and as it were, pilefcent papulæ or pointed chrystallizations, and are of a lighter green colour.

BUT the leaves of hirtellum are covered with very smooth even papulæ, which gives them a whitish green, or hoarish colour, that spangles when exposed to the sun.

FLOWERS, larger than those of hispidum, and much more shewy when perfect, and when extended exactly the diameter of half a crown, opening in the forenoon;

at

at the first opening flat, but after the second opening, or sooner, recurving, or rather revolute, which circumstance almost tempted me to call the plant *revolutum*; of a fine bright purple colour above, and white at the base, especially on the inside.

PEDUNCLES, long, cylindrical, covered with horizontal white hairs up to the very base of the calyx, where the hairs are gradually shortened, recurve back, acquire more or less of a chrystalline coat, and become papulose, indicating that the hairs of all hairy *Mesembryanthema* are little else than elongated papulæ;—when led from hence by a close analogy, we can perceive the prickles in aculeated *Aloes*, are a kind of elongation of their verucæ, or knob-like little warts, as appears by inspecting the nature of those warts in *Aloe arachnoidea-pumila*, *Aloe perfoliata mitreiformis*, *Aloe variegata* Ait. Kew. and many others.

CALYX, five cleft, the lower part of it covered with glittering pilefcent recurving papulæ, upper part with roundish shining chrystallizations, segments five, nearly equal, two plain, three edged with extremely thin, broad, white membranes.

PETALS,

PETALS, numerous, linear, attenuate at the base, emarginate, larger, broader, and longer than those of hispidum, of a bright but not dark purple colour, much paler on their outsides, white at their bases, beautiful when expanded, flat after the first or second expansion, recurving revolute.

FILAMENTS, yellowish white, expanding, numerous, of various lengths, encircling the germ at their bases, beautifully studded with oblong horizontal, irregular projecting chrystalline papulæ, of various lengths.

ANTHERÆ, yellowish white, pollen whitish, buff.

GERM, five angled, small deep green.

STYLES, five, long, recurving, yellowish, roughish, with exceeding short shaggyish protuberances.

CAPSULE, five cell'd, smallish pentagonal.

SEEDS, I have not seen.

R E M A R K.

THIS is the plant which is called *M. hispidum humile* at Mr. Lee's.

echina- **MESEMBRYANTHEMUM** foliis oblongis
tum ovatis, subtriquetris gibbis ramentaceo-
album hispidis, laciniis calycinis foliiformi-
(91) bus.

Ait.

Ait. Hort. Kew. 2. 194.

Syst. Nat. Gmel. tom. 2. 846.

White echinated fig-marygold.

Nat. of the Cape. Mr. Fr. Maffon, Ait.
Kew.

Introduced 1774. Ait. Kew.

Flowers July to October.

OBSERVATIONS.

ROOT, fibrous, much branched.

PLANT, diffuse and shrubby.

BRANCHES, cylindrical, axillary, long, at first upright, afterwards declining, and very diffuse, sometimes covered thinly with bristly hairs, for the most part only with numerous roughish papulæ, which are greenish on the young shoots, and white on the old ones.

LEAVES, succulent and very gross, opposite, distinct, expanding oblong-oval, convex on the under side; plano-concave above, echinate, or furnished on every part with straight strong white hairs or bristles, which arise from large papulose punctations, are nearly upright, and sometimes hooked.

THE young leaves of *M. echinatum album*, when the plant is drawn up by the warmth of a stove, sometimes become intirely smooth, and smaller

T

than

than usual, looking as if they belonged to another plant, but even in this state the roughened or verucose ramuli most readily distinguish it from its near relation the *M. barbatum*, of Linnæus, (which is the *barbatum ramosum*, branching bearded fig-marygold of nurserymen and others,) the shoots of which are never roughened, but constantly smooth.

PEDUNCLES, axillary, short, one or more arising from the same place, sometimes hispid, sometimes not.

CALYX, five leaved, or deeply five cleft, segments unequal, three long and foliaceous, that is, resembling the leaves of the branches, two very short with membranaceous edges, all of them more or less echinate, with short white bristly hairs.

FLOWERS, pretty numerous, small, opening in the fore part of the day white.

PETALS, linear, obtuse, intire, very little longer than the leaves of the calyx.

FILAMENTS, numerous and slender, often echinate, with short hairs, attached to the petals below, and converging above.

ANTHERÆ,

ANTHERÆ, very minute, yellow, ovate, with a groove on one side, and fixed to the filaments by their sides, but towards the top. Pollen, of a deep yellow.

GERMEN, nearly hæmispherical, or approaching to conical, with a hollow, or navel at top, smooth, shining, with five smoothish angles.

STYLES, five, yellow, ovate-lanced, expanding, united below, and occupying the navel on the crown of the germ.

STIGMATA, simple, acute.

CAPSULE, five angled, five cell'd, cells filled with numerous seeds.

SEEDS, small.

ADDITIONAL OBSERVATIONS.

THE old wiry, firm shoots of this plant strike with difficulty from cuttings, but are exceedingly tenacious of life.

I HAVE known cuttings of this and the yellow var. next mentioned not six inches long, planted and treated in the usual way, and kept in a stove on a shelf, exist a whole year, from October to October, without losing many of their leaves, and without striking one single fibre; so strongly they retain their vital powers! so tardily the old shoots root! the leaves of such cuttings were of course extremely far from plump.

but by no means destitute of sap. What tenacity of life ! I am acquainted with no other Mesembryanthemum capable of existing so long, without roots ; it is as much as can be expected from an Aloe, or the succulent crown of Bromelia Ananas, the pine apple.

THE young and tender shoots strike freely from cuttings, even before a single *unbruised* leaf decays.

echinatum THERE is a variety of the Mesembryanthemum echinatum with yellow flowers, much more rarely met with in collections than the white one above described.

OBSERVATIONS.

I HAVE no recent specimen of it proper for description, or I should have described it.

IN MY dried specimens the calycine leaves appear proportionally larger than those of the white flowered one.

THE juicy leaves, and more particularly the flowers of this yellow variety, when bruised, stain paper a strong yellow colour, which if it is, or could be rendered permanent, might possibly be turned to some account, as the juice might soon be produced, in almost
any

any quantity, by planting out slips in the full ground, in the spring, which would shoot a great way before autumn, and produce abundantly more juice than the leaves of potted plants.

barbatum MESEMBRYANTHEMUM foliis subovatis,
(92) papulosis distinctis, apice barbatis,
ramulis prolixis recumbentibus, caly-
cibus pentaphyllis glabris.

Mesembr. barbatum, Sp. pl. 691.

Mesembr. barbatum, Syst. Veg. Litch. Soc. 1.
383.

Mesembr. barbatum, Syst. Nat. Gmel. tom.
2. 846.

Mesembr. barbatum, α. Ait. Hort. Kew. 2.
184.

Curtis's Bot. Mag. 70. excellent.

Mesembr. barbatum, Hill's Hort. Kew. 154.

Mesembr. barbatum, 1. Weston's Nursery-
man, 169.

Mesembr. barbatum, 1. Weston's Cat. 161.

Mesembr. 9. Abercr. Bot. Arr. 2. 651.

Mesembr. barbatum, Steel's Cat. 60.

Mesembr. barbatum, foliis triquetro-ovatis
papulosis distinctis apice barbatis, Gouan.
Hort. Mons. 244.

Mesembr. 15. radiatum, ramulis prolixis re-
cumbentibus. Rand's Chelf. 132.

Mesembr. 14. subfruticosus decumbentibus
foliis teretibus apice barbatis. Mill. Gard,
Dic. ed. 7.

Ficoides capensis tereti folio, apicibus hirtis.

Pet. Gaz. t. 77. Figure 9, which is printed 6. in Spec. Pl. 691, and is either a slight mistake in Linnaeus's writing down the No. of the Figure, perhaps from hastily seeing the book sideways, or the wrong way upwards as he wrote it; or merely an error of the printer from an inversion of the figure 6.

Linnaeus in Sp. Pl. 691, gives the following synonyms, which I have had no opportunity of examining.

Hort. cliff. 216, no. 5.

Hort. ups. 127.

Roy. lugdb. 283.

Mill. Dict. (meaning Miller's Plates to his Dict. I suppose,) t. 176. f. 3.

Mesembr. radiatum, ramulis prolixis recumbentibus. Dill. elth. 245. t. 190. f. 234.

Ficoides capensis fruticescens, folio, tumido extremitate, stellata flore purpureo, Brad. Succ. 1. p. 6. t. 5. & 15.

Ficus Aizoides, folio, tereti, in villos radiatos aequante, flore rubro Volk. hesp. 222. t. 124, f. 6.

Trailing bearded fig-marygold.

Native of the Cape of Good Hope.

Cultivated 1714, by &c. Ait. K.

Flowers most part of the year.

O B S E R.

OBSERVATIONS.

ROOT, fibrous, branched.

PLANT, a low spreading decumbent shrub.

BRANCHES, cylindrical, slender, woodyish, arising opposite, and often alternate from the axillæ of the leaves, diffusely spreading or trailing; elongated, and smooth, with ascending points.

LEAVES, opposite, distinct, very remote, (when compared with those of *barbatum* β and γ Lin. which are my *hirsutum* and *densum*) nearly cylindrical, with a just perceptible attenuation towards the points, and very slightly plane above near the base;—blunt at the points, which terminate with from three to five subulate, whitish, radiating, bristly hairs, each arising from a small dark brown, often prominent gland, best observed in a glass. The leaves are less than those of my *hirsutum*, and beautifully studded with largish, regular tubercles, or polished papulæ, which are roundish-ovate, smooth, and when closely examined, bear no small resemblance to a piece of fine shagreen.

FLOWERS, not numerous, bright purple, smallish, opening in a forenoon.

PEDUNCLES, axillary, solitary, remote, an inch or more long, entirely destitute of hairs, cylindrical, thickening near the calyx, covered with minute shining papulæ.

CALYX, five leav'd or five cleft, smooth and papulose; segments unequal, two much longer and stouter than the rest, foliaceous, or like the leaves of the branches, ending in similar radiating hairs; the third segment larger than the remaining two, but much less than those already mentioned; often with a radiated point, and a membranaceous edge on one side, rarely on both; the two remaining segments much shorter and less than all the above, with membranaceous edges on every part, but rarely any radiating hairs on their points.

PETALS, fine bright purple within, paler without, not very numerous; inner ones paler, and extremely narrow.

FILAMENTS, white, and stout, shortish; some of them, though rarely, furnished at the base with white papulose ascending hairs.

ANTHERÆ, largish, yellow, oblong, furrowed.

GERM, five angled, smooth, and small.

STYLES,

STYLES, only five, in the specimens I have dissected; I had only two to dissect; greenish, broad at the base, but sharply subulate and short.

I THINK I have noticed before, that the Lichfield Society, in the translation of Linnæus's General Plantarum, gives ten styles to *M. barbatum*.

CAPSULE, five angled, small, five cell'd, not fleshy.

SEEDS, small, rarely ripening.

hirsutum (93) MESEMBRYANTHEMUM, ramulis hirsutis, foliis, semicylindrico-turgidis, apice barbatis, basi ciliatis scabrido-papulosis, calycibus sex vel septemphyllis, inæqualibus.

Mesembr. barbatum β. *Sp. Pl.* 691.

Mesembr. barbatum β. *Syst. Nat.* Tom. 2. 846.

Mesembr. barbatum β. *Ait. Hort. Kew.* 2. 184.

Mesembr. barbatum minor, *Weston's Nurseryman*, 1. 169.

Mesembr. barbatum, minus, *Weston's Cat.* 161.

Mesembr. 16, radiatum humile, foliis minoribus, *Rand's Chelf.* 132.

Ficoides, seu ficus atzoides, africana folio variegato aspero ad apicem stella spinosa, *Boerb. Ind. alt. Hort. Lug. Bat. pars 1. p. 291.*

Hairy

Hairy stalked radiated fig-marygold.

Native of the Cape of Good Hope.

Introduced

Flowers June to October.

OBSERVATIONS.

ROOTS, fibrous, not much branched or matted.

PLANT, forming in time a very low branched shrub.

BRANCHES, short, at first upright; afterwards decumbent, not quite cylindrical, set thickly with leaves, and covered with numerous short white horizontal hairs.

LEAVES, oblong, semicylindric, but turgid; gross, of different sizes, some of them nearly as large as those of myrsinum, and others, though rarely smaller than those of barbatum Lin. just described, blunt, terminating in from 20 to 40 white radiating hairs, each arising from a pale brown gland; —nearly connate; at the base on each side, usually ciliate, with a few strong white bristly hairs; —the largest leaves all over regularly covered with hard, rigid, roundish, oblong, projecting papulae, each of which, especially when viewed in a glass, terminates in a very short,

short, white, stiff, bristly, close pressed hair, directed upwards, which occasions a great roughness to the touch ;—between those rough pointed papulæ, the microscope discovers innumerable other papulæ, of a much smaller size, and resembling those of the generality of *Mesembryanthema*.

FLOWERS, pale purple, less than those of *my densum*, which is the *barbatum* γ *Lin.* and the next plant described, larger than those of *barbatum* *Lin.* the last plant described.

PEDUNCLES, at first, terminating the young branches, but afterwards rendered axillary by the protrusion of new shoots from the *alæ* of the uppermost leaves ; cylindrical, as long, or longer than those of *barbatum* *Lin.* but much stouter, and covered with white horizontal hairs.

CALYX, six leaved, or six cleft, (in some specimens before me, seven cleft) covered all over (except the segments) with long white bristly hairs ; segments blunt, unequal, not covered with hairs like the other part of the calyx, but with roughened, pointed papulæ, like the leaves of the plant, which they much resemble ; the two largest segments above twice the size of

of the others, foliaceous, cylindric-oblong, ciliate at the base on each side, terminating in from twenty to thirty white bristly radiating hairs, arising from pale brown glands,—the two next or middle sized segments, about a third the size of the two last, membranaceous on one side towards the base, and slightly ciliate on the other, rather foliaceous; terminating in from six to twelve radiating hairs, like those of the former. The two or three least, or remaining segments, above half as large as the two last, membranaceous on both sides, with scarcely foliaceous, projecting, nearly conical, roughly papulose points, which terminate in about six bristly radiating hairs, like those of the other segments.

PETALS, more numerous, larger and longer than those of *barbatum* Lin. pale purple within and without.

FILAMENTS, numerous, converged, short and stout, many of them furnished with chrySTALLINE papulose bristles towards the top, some of them barren, or destitute of antheræ, almost partaking of the nature of the petals.

ANTHERÆ, large, pale, heart-oblong, furrowed.

GERM,

GERM, not fleshy, but flattish.

STYLES, fix, extremely short, green.

CAPSULE, fix cell'd.

SEEDS, very small, not numerous ; ripe ones I never saw.

ADDITIONAL OBSERVATIONS.

By what principles of combination the great and accurate Linnæus could unite this plant with his *barbatum*, I am entirely at a loss to conceive.

He appears by his account in *Sp. Pl.* 691, to have examined even the fructification of both plants, and yet he unites them ; by so doing, all the best points or limits of specific distinction, in this extensive genus, are, in my way of thinking, at once blended, levelled and destroyed.

THE plants agree in nothing but their radiating points and purple flowers, and even in the best of these particulars they vary in number,—*barbatum* α . having about three or five radiating hairs at the termination of its leaves,—*barbatum* β . often above a score.

THEY disagree, and I think materially, in a great many substantial particulars, most of which I apprehend are alone sufficient for the establishment of a species,

species,— α . has cylindric— β . semicylindric leaves,— α . has smooth papulæ,— β . rough bristle-pointed papulæ,— α . has short, hirsute branches,— β . trailing, elongated, smooth ones,— α . has smooth pedunculi,— β . hairy ones,— α . has a five-leaved calyx,— β . a six or seven leaved one,—in α . the calyx is smooth,—in β . hirsute,— α . has five styles,— β . six,—and α . has a five celled capsule,— β . a six celled one.

IN a word, *M. barbatum* β . Lin. is as much allied to *M. echinatum* as to *M. barbatum* Lin. as appears by its bristle-pointed, or as it were, subechinate papulæ, &c.—from *echinatum*, however, it is abundantly distinct, as appears by the minute descriptions of each above given.

densum
(94)

MESEMBRYANTHEMUM subacaule, foliis densissime-imbricatis, connatis, semicylindricis, supra sub-concavis, apice barbatis, calycibus hexaphyllis, subequalibus hispidis.

Mesembr. barbatum, γ . Lin. *Sp. Pl.* 691.

Mesembr. barbatum, γ . *Syst. Nat.* Gmel.
Tom. 2. 846.

Mesembr. barbatum, γ . *Ait. Hort. Kew.* 2.
184.

Mesembr. barbatum major, *Weston's Nurseryman*, 1. 169.

Mesembr.

Mesembr. barbatum majus, Weston's Cat. 162.

Mesembr. radiatum humile, foliis majoribus,
Rand's Chels. 132.

Mesembr. 13. acaule, foliis apice barbatis,
Mill. Gard. Dic. ed. 7.

Ficoides, seu *ficus aizoides*, *Africana*, folio
variegato-aspero ad apicem stella spinosa
ornato; flore violaceo, Boerb. Ind. Alt.
Hort. Lug. Bat. Pars. 1. page 291? I
should not have applied this synonym, if I
had not observed Miller had given it, in
the 7th ed. of his Dictionary, under the
bearded *Mesembryanthemum*, which he
terms "*acaule foliis apice barbatis*," and
which is therefore in all probability my
densum.

Dwarf beaded tufty fig-marygold.

Native of the Cape of Good Hope.

Introduced

Flowers May.

OBSERVATIONS.

As I have only dried specimens of this
plant in flower, I cannot be so parti-
cular in my description of it as I could
with.

DILLENIIUS, Miller, and all the writers
before the great Linnæus, considered
this plant as specifically distinct from
the plant I have named *hirsutum*
above, but, he thought proper to
join

join it also to his *barbatum*, from which I conceive it to differ specifically in having semicylindrical, densely imbricated, larger leaves, and hispid pedunculi and calyces.

FROM my *hirsutum*, I also conceive it to differ specifically in being nearly stemless, having larger leaves, densely imbricated, and almost smoothly papulose; covering every part of the stem; and nearly equal six leaved calyces.

DESCRIPTION.

THE following description, it is proper to mention, is made from a fine living plant, which has not yet produced flowers, and from two dried specimens, in flower, all lying before me; near which also lie living specimens in flower, of the two last described species, *barbatum* and *hirsutum* of these OBSERVATIONS.

ROOT, fibrous, not spreading far.

PLANT, whilst young, densely covered with leaves, and stemless, acquiring by age, very short branches, entirely covered from the sight by leaves and lesser branches.

BRANCHES, in young plants, none; in very old ones, extremely short and crowded or clustered; arising opposite
or

or alternate, from the axillæ of the leaves; and in healthy plants completely hid from the sight, by lesser and still shorter branches, and densely crowded imbricating leaves.

IN plants drawn by the heat of a stove, the little branches become just sufficiently elongated, or lengthened out in the joints, to shew they are hairy when visible.

LEAVES, crowded, densely imbricate, excluding the branches entirely from the sight; connate, oblong, semicylindric, slightly concave above, and when closely examined, rather ciliate at the base, but not so much so, as those of *hirsutum* of these **OBSERVATIONS**,—covered with oblong pointed papulæ, not hispid to the touch like those of *hirsutum*, but smooth, and looking in the microscope like pointed scales lying close to each other, but not in contact; with no lesser papulæ between them when viewed in the glass, as is the case with those of *hirsutum*;—leaves terminating in exceeding blunt points, which are furnished with from about sixteen to thirty or more radiating almost spinose bristles, which are about a quarter of an inch long, whiter, longer

and stronger than those of *hirsutum*, and arise from larger and higher coloured glands, which glands are united at the base, and placed round, or fixed to a circular, flat whitish ligneous substance or body, which separates from the blunt points of the leaves, with a slight pull, and leaves a hollow or navel, which it occupied there.

FLOWERS, larger than those of *hirsutum*, bright purple.

PEDUNCLES, longer than those of *hirsutum*, covered with hispid bristles; much thickened from the middle upwards.

CALYX, in the specimens before me, which are the only ones I have ever seen, six-leaved or parted; segments, foliaceous, nearly equal, with from ten to thirty radiating bristly hairs each, at the points.

PETALS, much larger and broader than those of *hirsutum*.

FILAMENTS,

GERM,

STYLES,

CAPSULE,

SEEDS,

} I have not examined.

++++ SUFFRUTESCENTIA FOLIIS TRI-
QUETRIS.

perfoliatum MESEMBRYANTHEMUM, articulis cau-
(95) linis terminatis foliis connatis, acumi-
natis, punctatis, glaucis triquetris, sub-
tus triacanthis.

Mesembr. uncinatum, *β.* Lin. Sp. Pl. 186.

Mesembr. uncinatum, *β.* Ait. Hort. Kew. 2.
187.

Mesembr. 25, perfoliatum majus, folio trian-
gulari glauco punctato, Weston's Nursery-
man, 1. 170.

Mesembr. uncinatum majus, Weston's Cat.
162.

Mesembr. 21. perfoliatum, foliis majoribus
triacanthis, Rand's Chelf. p. 132.

Mesembr. 19. perfoliatum foliis majoribus,
apicibus triacanthis, Mill. Gard. Dic. ed. 7.

Ficoides africana frutescens, perfoliata folio
triangulari, glauco punctato cortice lignoso
candido, tenui, Boerb. Ind. alt. Hort. Lug.
Bat. Pars. 1. p. 290? As this synonym is
applied to this plant by Miller, I have in-
serted it; but scarcely believe it to belong
to this plant.

Greater hooked leaved fig-marygold.

Native of the Cape of Good Hope.

Cult. in 1714, Ait. K.

Flowers June to September.

OBSERVATIONS.

THIS is the plant which Miller named *perfoliatum*, in the last edition of his Dictionary, (I think,) where he treats it as a plant specifically distinct from the *uncinatum* of Linnæus.

It is a plant I have seen much of, and often observed, and am convinced it is distinct from *uncinatum*, as much as it is necessary for two plants to be, in a botanical point of view. Linnæus however thought proper to unite them, as one species, by the name of *uncinatum*.

I AM acquainted with some scores of plants, whose specific differences rest upon much more slender foundations than the difference observable at all times in the leaves and shoots of those two *Mesembryanthema*.

THE leaves and branches of *perfoliatum* are not only larger and almost white, but the former have usually three, sometimes four denticulations, or spines, underneath their points, when full grown.

WHEREAS the leaves and branches of *uncinatum* are not much above half the size of those of *perfoliatum*, nearly of a green colour, with never more than

than two denticulations or spines beneath the points.

I HAVE seen the flowers of *perfoliatum* several times, and in several places this season, but have not been able to procure a specimen for description.

THE flowers are purple, of a good size, but not showy, and arise axillary and sessile, from the bosoms of the uppermost leaves of the plant, and open in a morning.

PEDUNCLES, apparently none.

uncinatum (96) **MESEMBRYANTHEMUM**, articulis caulinis, terminatis, foliis connatis, acuminatis, brevis, punctatis, triquetris subtus diacanthis.

Mesembr. uncinatum, Sp. Pl. 692.

Mesembr. uncinatum, Syst. Nat. Gmel. tom. 2. 846. including the above *perfoliatum* as a var.

Mesembr. uncinatum, Syst. Veg. Litch. Soc. 1. 383.

Mesembr. uncinatum, 9. Ait. Hort. Kew. 2. 186.

Mesembr. uncinatum, Hill's Hort. Kew. 154.

Mesembr. uncinatum, *perfoliatum minus*, articulis, caulinis terminatis in folia connata, acuminata subtus dentata, Weston's Nurseryman, 1. 169.

Mesembr. uncinatum. 1, Weston's Cat. 162.

Mesembr. 14. uncinatum, (including the above
perfoliatum as a var.) *Abercromb. Bott.*

Art. 2. 652 I HAVE

Mesembr. 2. 18. perfoliatum, *foliis minoribus*
dissectis, *Band's Shelf. 132.*

Mesembr. 18. anticulis ciliatis terminatis in
folia acuminata subtus dentata, *Mill. Gard.*
Dissect. 7.

Fitoides asca, *foliis triangularibus glauco*, *perfo-*
liatis, *apice spinoso*, *Boerb. Ind.*

Alt. Hort. Lugd. Bata. Pars 1. page 290?

Lesser hook'd leaf'd fig. many bld.

Native of the Cape of Good Hope.

Introduced

Flowers June to September.

(de)

OBSERVATIONS.

I HAVE seen this plant flower, but have
no specimen in bloom proper for de-
scription, and as I have pointed out
the particulars, in which I conceive it
to differ from *perfoliatum*, under my
account of that plant, it is unnecessary
I presume to repeat such particulars
here.

I SHALL be censured, and I am aware of
it, for separating the *uncinatum majus*
and *minus* of the old authors, which
the great Linnæus has reduced to one.

BUT I have Miller, that prince of practi-
cal Horticulture on my side ;
Miller,

Miller, the only Botanist, who could ever boast the long well earned experience of nearly fourscore years, all-surrounded by the most favourable situation and opportunities, and all-devoted to observation, experiments and practice!

MILLER was not only the favourite of his own countrymen, but foreigners also paid him those tributes of praise his fame and publications deserved.

DR. PULTENEY in his agreeable Progress of Botany in England, tells us, v. 2. p. 243, they emphatically stiled him,

“HORTULANORUM PRINCEPS.”

He also acquaints us, that the great Linnaeus himself said of his Dictionary,

“NON ERIT LEXICON HORTULANORUM
SED BOTANICORUM.”

So much for poor Miller; he alas! who pleased so well, or rather let me say, he who instructed and edified so much, and was carested even by the great, whilst living, now lies forgotten by his friends, inhumed amongst the undistinguished dead, in the bleak cold yard of Chelsea church;---the very theatre of his best actions not half a mile distant!---without a tomb!---without a stone!---nay, destitute of a

single line, to mark the spot, where rests retired from all its cares, and useful toils, the time-worn frame of the Prince of Horticulture.

THE very theatre of his best actions, (the Physic Gardens of the worshipful Company of APOTHECARIES at Chelsea,) not half a mile distant.

How are those discerning foreigners, who so meritoriously rendered the language of his Dictionary into their own, to judge of this?

By what measure are they to estimate the fact?

THE following short account of Miller, from the great respect I have for the abilities he possessed, I shall beg leave to insert in this place.---I have taken the liberty of extracting it from the second volume of Dr. Pulteney's agreeable "Progress of Botany in England."

" PHILIP MILLER was born in the year
 " 1691, his father was gardener to the
 " Company of Apothecaries at Chelsea,
 " and his son succeeded him in that
 " office. He raised himself by his
 " merit from a state of obscurity, to
 " a degree of eminence, but rarely if
 " ever equal'd in the character of a
 " gardener. It is not uncommon to
 " give

“ give the term of Botanist to any man
“ that can recite by memory the plants
“ of his garden.

“ MR. MILLER rose much above this
“ attainment. He added to the know-
“ ledge of the theory and practice
“ of gardening, that of the structure
“ and characters of plants, and was early
“ and practically versed in the me-
“ thods of RAY and TOURNEFORT,
“ habituated to the use of these from
“ his younger years, it was not with-
“ out reluctance that he was brought
“ to adopt the system of Linnæus, but
“ he was convinced at length by the
“ arguments of the late Sir WILLIAM
“ WATSON and Mr. HUDSON, and
“ embraced it.

“ To his superior skill in his art, the
“ curious owe the culture and prefer-
“ vation of a variety of fine plants,
“ which in less skilful hands would
“ have failed at that time to adorn the
“ conservatories of England.

“ HE maintained a correspondence with
“ many of the most eminent Botanists
“ on the continent, amongst others,
“ with LINNÆUS.

“ HE was admitted a member of the
“ Botanical Academy of Florence, and
“ of the Royal Society of London, in
“ which

“ which he was occasionally honoured
 “ by being chosen of the council.

“ MR. MILLER was the only person I
 “ ever knew who remembered to have
 “ seen Mr. RAY; I shall not easily
 “ forget the pleasure that enlightened
 “ his countenance, it so strongly ex-
 “ pressed the *virgilium tantum vidi*,
 “ when in speaking of that revered
 “ man, he related to me that incident
 “ of his youth.

“ MR. MILLER's infirmities induced
 “ him to resign his office in the garden
 “ a little time before his decease,
 “ which took place December 18,
 “ 1771, in the 80th year of his age.
 “ He left a very large Herbarium of
 “ exotics, principally the produce of
 “ Chelsea Garden.”

Pulteney's Progress of Botany in England.

MR. MILLER was the author of several
 publications, besides the very nu-
 merous editions of his Dictionary and
 Kalendar.

• viride MESEMBRYANTHEMUM foliis perfoliatis,
 (97) triquetro-semicylindricis, acutis in-
 tegerrimis, apice uncinato-recurvis.

Green perfoliate hook'd fig-marygold.

Native of

Introduced

A new

A new species.

Flowers in July.

DESCRIPTION.

VERY much like *uncinatum*, but entire
leaved, and deep green in every part,
except the flowers.

Roots, perennial, wiry, and few.

PLANT, shrubby, weakish.

BRANCHES, opposite, axillary, arising from
the bosoms of the leaves; when young,
erectish.

LEAVES, perfoliate, of a fine shining green
colour, punctate, expanding, between
triquetrous and semicylindrical, subu-
late, very intire, ending in a fine white
recurving, or bristly point, which is
hooked and very harmless.

FLOWERS, I have seen, they are few, so-
litary, rubicund, small; make a poor
appearance, and open in a forenoon.

I AM sorry I possess none for description.

**tenellum* MESEMBRYANTHEMUM, foliis connato-
(198) perfoliatis minimis, triquetris, scabrido-
punctatis, apice subulato-recurvis, acu-
tis, angulo carinali-scabris.

Small connate fig-marygold.

Native of

Introduced

A new species.

Flowers in July.

DESCRIP.

DESCRIPTION.

ROOT, very slender, wiry, and trifling.

PLANT, a weak shrub, a foot high.

BRANCHES, in the plant before me, axillary, chiefly alternate, small, but not short, cylindric-compressed, wiry and slender, invested with the sheaths of the perfoliate leaves, if they can so be called, when there is a channell'd line runs down the middle of the sheath to the base, but does not fairly separate the leaves.

LEAVES, perfoliate, or as some may think, only connate, sheathing the branches, with a channell'd line, running up from the origin of their sheaths on each side, to where they expand—opposite, roughly punctate green, or slightly glaucous-green, the smallest of all the perfoliate fig-marygolds I have seen, being from a quarter to half an inch long, very slender, sharply triquetrous, slightly subulate, with fine white recurving points, and scabrous, almost ferrulate keels.

FLOWERS, very small and white.

PEDUNCLES, somewhat two flowered.

REMARKS.

REMARKS.

THE general appearance of this plant is like that of *M. viride* of these OBSERVATIONS, but it is not more than a third as large in all its parts, and roughly punctate and slightly glaucous; whereas *viride* is deep green, lucid, and smooth.

It can scarcely be the same as the *M. cappillare* of the *Supplementum Plantarum* of the younger Linnæus.

**imbrica-* MESEMBRYANTHEMUM pedunculis sub-
tum unifloris bracteis foliaceis imbricatis,
(99) foliis perfoliatis glaucis triquetro-se-
miteretibus.

Imbricated fig-marygold.

Native of

Introduced

A new species.

Flowers in July.

OBSERVATIONS.

I SAW this plant flower in July last abundantly; it is closely allied to the next described species, and very much like the last in some particulars, but is as large again in all its parts, with pedunculi invested up to the very calyx, with perfoliate,

perfoliate, imbricate, bracteal leaves which are much like the leaves of the branches, but less and barren of shoots, and much more crowded upon each other.

FLOWERS, appear in July, white, as large again as those of tenellum.

I REGRET I have no specimen in flower by me to describe this plant from.

*multiflo- MESEMBRYANTHEMUM foliis glaucis per-
rum foliatis, triquetris floribus aggregatis
(100) sub-seffilibus.

Many flowered fig-marygold.

Native of

Introduced

Flowers July.

A new species.

OBSERVATIONS.

I AM sorry I have no recent specimen of this plant in flower to describe.

THE plant is much like the last, so much so indeed, that I dare not warrant them to be specifically distinct, until I have had further opportunities of examining them. Multiflorum appears to differ abundantly from imbricatum in the very great quantity of flowers which cover its branches; those of imbricatum producing only a few flowers.

FLOWERS,

Flowers, in multiflorum, white, the size of those of *imbricatum*, and like them.

bractea- **MESEMBRYANTHEMUM** foliis subacina-
tum ciformibus punctatis, apice recurvis,
(101) **bracteis amplexicaulibus lato ovatis**
carinatis.

Ait. Hort. Kew. 2. 185.

Syst. Nat. Gmel. Tom. 2. 846.

Mesembr. 27, *uncinatum* scabrum, petalis
purpureis circumactis, **Rand's Chelf.** 132.

Bracteated fig-marygold.

Nat. of the Cape of Good Hope, Ait. K.

Cultivated 1732, Ait. K.

Flowers July to October.

OBSERVATIONS.

ALTHOUGH this plant is figured in the
Hortus Elthamensis, as appears by the
reference from the **Hort. Kew.** of
Aiton; no mention of it is made in the
following books, which I have searched,
and which are now lying open before
me.

Lin. Species Plantarum, ed. 1764.

Syst. Veg. Lich. Soc.

Mill. Dic. ed. 7.

Weston's Nurseryman.

Weston's Cat.

Abercrombie's Bot. Arr.

Hill's Hort. Kew.

THE following is a description drawn from a living specimen, of what I take to be the *M. bracteatum*.

PLANT, shrubby, slender, not very much branched, upright.

BRANCHES, covered with a brownish coloured bark, erect, when young, but slender; usually more or less ancipitous, by taking slight winged membranes from the decurrent keels of the leaves.

LEAVES, opposite, distinct, sub-acinaciform, or triquetrous-compressed, slightly incurving, rather roughly punctate, with small, acute, recurving, cartilaginous hooks at the points, which frequently acquire a purple tinge.

FLOWERS, terminating the branches, of a bright red or purple colour, radiated, opening in the fore part of the day.

PEDUNCLES, short, ancipitous, terminating the branches, and each supporting one flower.

BRACTEÆ, two, investing the pedunculi just beneath the calyx, which they partly embrace, broad, ovate, sharply carinate, punctate, membranaceous towards the edges, and terminating in a small recurving point, similar to the little cartilaginous hooks which terminate the leaves of the branches.

CALYX,

CALYX, five cleft, pentagonal upwards, taking its angles from the keels of the segments; segments, five, punctate, nearly equal, or two plain, and somewhat less than the other three; which three are rather longer and membranaceous towards the edges; all the segments much broader at the base than at the points; or, subulate keel'd; or, triquetrous, resembling the leaves of the plants, ending in similar recurving cartilaginous points.

PETALS, numerous, of three kinds or distinctions. The outer ones very long and narrow, unequal, and of a bright purple colour. The next series much shorter and narrower than the last, unequal, purple above, whitish-yellow at the base. The third or innermost series very short, unequal, still narrower than the last, converging, all yellow, of a singular, somewhat stamineous nature, or resembling in structure the true filaments, shining in the microscope, with beautiful and spangling chrystalline minute papillæ, tapering to a very slender hair-like point, and quite covering up the filaments beneath them from the sight.

FILAMENTS, very few, very short, very slender, or almost capillary, entirely
X covered

covered from the sight by the above,
yellow, converging stameneous petals.

ANTHERÆ, whitish-buff, very small.

GERM, small, smooth.

STYLES, five, very short and green.

CAPSULE, five angled, small.

SEEDS, I have not seen.

ADDITIONAL OBSERVATIONS.

THE abovementioned stameneous filaments are of a very singular nature, making the plant almost appear like a thing of a different genus; for the flower radiating by its long outward petals, and disk-like from its central yellow, short, upright, or converging, imperfect stameneous petals, has much the air of a compound syngenesious flower.

**radiatum* MESEMBRYANTHEMUM, foliis longis, sub-
(102) equilateri-triquetris, basi incrassatis,
apice attenuato-uncinatis, floribus bracteatis, bracteis triquetris membranaceis.

Radiated fig-marygold.

Native of

A new species.

Introduced

Flowers August to November.

OBSER-

OBSERVATIONS.

THE following is a description of a fine specimen taken from a plant, sold by Mr. Lee, under the name of *Mesembryanthemum radiatum*; it appears distinct from *bracteatum* just described, in its bractæ and longer and more equilateral leaves, but may on further examination prove the same.

DESCRIPTION.

ROOT, perennial, fibrous.

PLANT, a weak slender shrub, about two feet high.

BRANCHES, slender, erectish, covered with a whitish brown coloured bark, and somewhat ancipitous, particularly while young.

LEAVES, opposite; whilst young, appearing as if connate;—when old, as if distinct; as long again as those upon my specimens of *bracteatum*, the longest being regularly above an inch from the base to the point, on a plant which has stood in the open air all summer; whereas the longest on a plant of *bracteatum*, which has also stood out all summer, are not more than half an inch,—and both plants have been under equal health, age, and treatment.

FLOWERS, bright purple, radiating, almost as large again as those on my specimen of *bracteatum*.

PEDUNCLES, terminating the branches, longer than those of *bracteatum*,—bracteated.

BRACTEÆ, larger, longer, more triquetrous, and not tapering so suddenly to a point as those of *bracteatum*.

PETALS, bright shining purple, linear, some of them near an inch long, attenuate downwards, end-nick'd, innermost series resembling those of *bracteatum*, yellow, subulate, very narrow, shining, and of a singular nature, looking, especially in the microscope, like a little bunch of yellow tassels in the centre of the flower, from which, although converged, they gently swerve in every direction, and are more numerous than the true petals, becoming less and less towards the centre, where they very nearly resemble the true filaments of the plant, which are enveloped under their protective shade;—they also bear a distant appearance to the central fringe-like rings, which are so much admired in the flowers of all the known species of *Passiflora*; an ample and very curious account of which rings, by Mr. Sowerby, (or *Nectaria*,

taria, as he rather seems inclined to consider them,) I would recommend my readers to peruse, in the excellent Transactions of the Linnæan Society of London, vol. 2. page 19.

FILAMENTS, short, white, occupying the concavity formed by the convergency of the short inner petals.

ANTHERÆ, of a middle size, white; pollen, white.

GERM, urn shaped or roundish.

STYLES, greenish, expanding, longer than those of bracteatum.

CAPSULE, five angled, five cell'd, fleshy.

SEEDS, few, whilst in the green capsule, nestling in pulp, white, extremely small, orbicular-kidney shaped, and furnished with a very singular appendage or string, several times their own length, and of a curved figure, by which they are probably affixed to the capsule.—

This curving filament or string is doubtless of the same nature as the short pedicle, that supports the seeds of leguminous, and possibly most other plants, and is apparently destined to perform an office somewhat analogous to that of the umbilical cord of quadrupeds.

I FOUND it a curious object in the microscope.

CALYX, I had forgot to speak of; it is five parted, segments not quite equal, two being longer, equilateral, and plain; the three others shorter and membranaceous.

SUCH are the appearances in my specimens.

*compres- MESEMBRYANTHEMUM foliis triquetris
sum? apice recurvis basi sub-membranceis,
(103) pedunculis sub-terminalibus, sub-nudis.

Compressed leav'd fig-marygold.

Native of

Introduced

Flowers July to October.

A new species I believe.

OBSERVATIONS.

IN the spring of the present year, I saw in a collection near London, a Mesembryanthemum, named compressum, which was sent from some Nursery near London, by that title. I solicited no specimen of it at the time, which I now regret, for I am entirely at a loss to know whether it is the plant I am just going to describe under the queried name of compressum, or distinct from it;—I think it is the same, but cannot be sure;—my specimen is from Kew, and now lies before me,—it may be the same as bracteatum Hort. Kew. but I think it is not,—or it may be the

the same as a *Mesembryanthemum* I saw in another Collection last spring, called *stellatum*, which had triquetrous leaves; of this last I obtained no specimen, but shall make mention of it in the division "*Incertæ tribus*," at the end of these OBSERVATIONS, by the name of *stellatum*;—it had triquetrous (not barbate) leaves.

DESCRIPTION of the abovementioned specimen from Kew, which I fancy to be the same as the species I saw named *compressum*, but cannot assert it.

PLANT, shrubby, upright, like *bracteatum*, but a little stouter.

BRANCHES, alternate, somewhat flexuose, firmer than those of *bracteatum*.

LEAVES, like those of *bracteatum* and *radiatum*, but shorter than those of either, with slight membranaceous edges towards their bases, which are best observed in the uppermost leaves.

CALYX, like that of *bracteatum*, viz. five cleft, segments subequal, three membranaceous, two plain.

FLOWERS, larger than in my specimens of *bracteatum*; less than in my specimens of *radiatum*; in other particulars nearly the same.

PETALS,	} Nearly the same as in bracteatum.
FILAMENTS,	
ANTHERÆ,	
GERMEN,	
STYLES,	

PEDUNCLE, not strictly bracteate in my specimen;—extremely short, if we do not call it bracteate;—extremely long, (compared with that of bracteatum) if we do call it bracteate, being naked below the leaves, which answer to bracteal leaves, for one inch and an half.

THE peduncle in my specimen (and there is only one upon it) is not terminal, but arises from the axilla of the uppermost branchlet, which branchlet is produced from the bosoms of those leaves which answer to the bracteal leaves of bracteatum, but are narrower, shorter, and more like stem leaves than the bractææ on the pedunculi of bracteatum; which (bractææ) I never saw produce the least vestige of a shoot from their bosoms.

THE different extents of the recent flowers of bracteatum, radiatum, and compressum, in my specimens, are as follow:

M. BRACTEATUM has blossoms almost the diameter of a shilling.

M. RADI-

M. RADIATUM has blossoms very considerably more than the diameter of a crown ;—and

M. COMPRESSUM has blossoms almost the diameter of half a crown.

glaucum MESEMBRYANTHEMUM foliis triquetris
(104) acutis punctatis distinctis calycibus foliolis ovato-cordatis.

Spec. Plant. 696.

Syst. Veg. Lich. Soc. 1. 384.

Syst. Nat. Gmel. Tom. 2. 846.

Ait. Hort. Kew. 2. 192.

Gouan's Hort. Mons. 244.

Weston's Nurseryman, 171.

Weston's Cat. 162.

Steel's Essay, 62.

Abercr. Bott. Arr. 2. 654.

Hill's Hort. Kew. 155.

Mesembr. 26, *scabrum flore sulphureo convexo, Rand's Chelf.* 152.

Mesembr. 34, *foliis subulatis triquetris, strictis acutis, punctis pellucidis obsolete sparsis, Mill. Gard. Dic. ed.* 7.

Ficoides afra, caule lignoso erecto, folio triangulari ensiformi scabro, flore luteo magno, Boerb. Ind. Alt. Hort. Lug. Bat. pars 1. p. 290.

Glaucous leav'd fig-marygold.

Nat. of the Cape of Good Hope.

Cult.

Cult. 1696, Ait. K.

Flowers June and July.

I HAVE no recent specimens of this plant in flower by me.

THE following is a description of the best specimens I have of it.

ROOT, fibrous, strong, much branched.

PLANT, woody, strong, upright, shrubby.

BRANCHES, upright, woody, firm, arising alternately from the axillæ of the leaves, and forming a handsome shrub.

LEAVES, glaucous, roughly punctate, especially on the keel angle, large, when full grown expanded, triquetrous, much compressed, and somewhat sword shaped, bluntish.

FLOWERS, very large, sulphur coloured, only produced by old plants, and by them sparingly.

PEDUNCLES, terminal, long, solitary, in my dried specimens.

CALYX,	}	I have not examined.
COROLLA,		
FILAMENTS,		
STYLES,		
CAPSULE,		
SEEDS,		

* glau- MESEMBRYANTHEMUM, foliis triquetris,
coides distinctis pellucido-punctatis, carinis
(105) obtusis sub-glabris, pedunculis bracteatis.

Purple

Purple flowered glaucous fig-marygold.

Native of

Introduced

Flowers July to October.

A new species.

OBSERVATIONS.

THIS plant is extremely like glaucum, almost too much so to be separated from it; but I have been assured it is distinct from glaucum by those who have had better opportunities of comparing the two plants together than myself.

I HAVE no recent specimen in flower to describe it from.

IT appears to differ from glaucum in some of the following particulars.

ROOT, fibrous, branched.

PLANT, a firm upright shrub.

BRANCHES, alternate, axillary, upright or expanding, upper ones in my specimen rather zigzag or flexuose, and slenderer than those of glaucum.

LEAVES, exceeding distinct, opposite, triquetrous, most of them nearly equilateral, or, rarely to be called compressed, marked every where with large pellucid impunctations, which are smoothish; the keel angle rather blunt

blunt and not rough; acutish at the points; whereas the leaves of glaucum are much compressed, marked with rough impunctations, with the keel angle very sharp, and rougher than any other part of the blunt pointed leaves.

FLOWERS, in my dried specimen two; terminating the branch, scarcely larger than those of glaucum, of a very rich purple colour, approaching when dried to red orange; whereas the flowers of glaucum are usually solitary, and always sulphur coloured.

PEDUNCLES, two, terminating the branch in my specimen, about an inch long, one of them furnished with two bracteal leaves, the other with only one.

BRACTEÆ, like the leaves of the branches but shorter, being only from a quarter to half an inch long, sitting on the peduncles scarcely higher up than the middle, and reaching to the base of the calyx.

WHEREAS the peduncles of glaucum are in my specimens solitary, much longer than those of glaucoides, with no regular unprolific bracteal leaves.

THE CALYX also differs in some respects, which my dried specimen will not allow me to make proper mention of.

REMARK.

R E M A R K.

In bloom the two plants speak for themselves ;—glaucum having a pale yellow ;—glaucoides a rich purple flower.

aureum MESEMBRYANTHEMUM, foliis cylindrico-triquetris—punctatis distinctis, pistillis atro-purpurascensibus.

(106)

Ait. Hort. Kew. 2. 190.

Curtis's Mag. 262. most excellent.

Weston's Cat. 162.

Steel's Essay, 61.

Ficoides seu ficus aizoides Africana folio longo tenui flore aurantio. Boerb. Ind. Alt. 1. 291?

Golden fig-marygold.

Introduced

Native of the Cape of Good Hope, Ait. K.

Flowers most part of the year.

O B S E R V A T I O N S.

ALTHOUGH this fine plant appears to have been cultivated and described by Miller as early as the year 1750, as the Hort. Kew. of Mr. Aiton informs us ; no mention of it is made in the following books, all of which were published long after that period.

Spec. Plant. ed. 1764.

Syst. Veg. Litchf. Soc.

Syst. Nat. Gmel.

Weston's Nurseryman.

Abercromb.

Abercromb. Bott. Arr.

Hill's Hort. Kew.

NEITHER do I find it in the 7 ed. of Miller's Gardener's Dictionary, published in 1759.

WESTON has it by the name of *M. aureum*, in his catalogue, p. 162, and tells us it was one of the sorts described by Miller, &c. he does not mention it in his Nurferyman, and in his catalogue it is inserted with three others as an appendix at the end of his list of *Melembryanthema*.

DESCRIPTION.

ROOT, fibrous, perennial, branched.

PLANT, shrubby, scarcely capable of supporting itself upright when tall.

BRANCHES, ligneous dark brown, slender, long, and not crowded, young ones somewhat compressed and greener.

LEAVES, slightly glaucous, punctate, smooth, erect, expanding sub-triangular, or between sub-triangular and semicylindric, with acute points, which often assume a purplish tinge.

FLOWERS, large and specious, of a very deep orange colour, opening very early in the morning if the sun shines, remaining open only a short time; quickly folding if the sun disappears,

or

or if turned out of the greenhouse into the open air when fully expanded.

PEDUNCLES, . terminal and axillary, round, thickening upwards, but sometimes not quite so thick close to the calyx as a little below it.

CALYX, large, five cleft, segments acute, nearly equal, more or less membranaceous and punctate.

PETALS, numerous and long, linear but broadish, acutish, deep orange on the inside, paler without, making a fine appearance when expanded.

FILAMENTS, deep yellow, just shorter than the calyx.

ANTHERÆ, deep yellow, pollen yellow.

GERM, smooth, somewhat urn shaped above, and five-angled.

STYLES, five angled, or rather style one, deeply divided into five segments or stigmata, which are black purple coloured, expanding, fixed as it were to the style by an extremely short and slender thread, swelling out in the middle, and tapering-obliquely towards the points, or rather gibbous awl shaped, with a roughened surface.

CAPSULE, urn shaped, slightly navel'd, or hollowed at top, five angled, five cell'd.

SEEDS, rather few in the specimens before me.

aureum

aureum I HAVE seen a variety of aureum, with a
pallidum paler, and of course, less handsome flower than the above;—when I first observed it, the plant was in the house, and I thought it casual, but I have since seen it equally pale in plants which have stood in the open air.

I HAVE one thing to observe, by way of cautioning my readers against too easily believing a paler flower than usual, a real variety: and it is—that attention ought to be paid to the season of the year in which the plant blooms, and to the strength of such plant.

FOR a weak plant, in a darkish house, will often have a paler flower than it ought to have.

AND a strong plant, if out of doors in the cold wet months of September and October, will have much paler flowers than it had in June, July, and August, and this is remarkably observable, even in the strongest plants of *M. canaliculatum* of these Observations.

M. AUREUM would perhaps have ranked better near *bicolorum*.

umbellatum **MESEMBRYANTHEMUM** foliis subulatis,
 scabrido punctatis, connatis, apice patulo, caule erecto corymbo trichotomo.
 (107) *Spec. Plant.* 689.

Syst. Veg. Licb. Soc. 1. 383.

Syst. Nat. Gmel. Tom. 2. 844.

Ait. Hort. Kew. 2. 181.

Hill's Hort. Kew. 154.

Weston's Nurseryman, 1. 168.

Weston's Cat. 161.

Abercromb. Bott. Arr. 2. 650.

Steel's Essay, 60.

Mesembr. 43, *frutescens floribus albis umbellatis*, *Rand's Chelf.* 133.

Mesembr. 6, *foliis subtrigonis subulatis caule erecto corymbo trichotomo*, *Mill. Gard. Dic.* ed. 7.

Ficoides africana erecta teretifolia, floribus albis umbellatis, *Herm. parad.* 166. *Tab.* 166.

Ficoides 13, *sen ficus aizoides, africana erecta teretifolia, floribus albis umbellatis*, *Boerb.*

Ind. alt. Hort. Lug. Bat. pars 1. p. 291.

Umbell'd fig-marygold.

Native of the Cape of Good Hope,

Cult. 1727, *Ait. K.*

Flowers June to Sept. *Ait. K.*

OBSERVATIONS.

THE MESEMBRYANTHEMUM umbellatum

I have never seen in full expanded bloom;—I have several times seen it before, and after flowering, but have no specimen of it in bloom proper for description.

YOUNG plants of it rarely flower;—old ones every year.

ROOT, strong, woody above, and fibrous below.

PLANT, forming a regularly branched and handsome shrub, two or more feet high.

BRANCHES, woody, strong, expanding, arising opposite, and axillary from the bosoms of the leaves.

LEAVES, connate, sub-triquetrous subulate, rather glaucous, as if sheathing the branches slightly below their bases, and appearing swollen there;—in which respect, as well as in the colour and quantity of the flowers, umbellatum comes nearer my multiflorum, than either aureum or spinosum;—and if I had thought of those circumstances sooner, I should have placed it near multiflorum.

FLOWERS, terminating the branches, white, forming a trichotomous corymbus.

spinosum MESEMBRYANTHEMUM foliis teretii-tri-
(108) quetris punctatis distinctis, spinis ramosis.

Sp. Plant. 693.

Syst. Veg. Lichf. Soc. 1. 383.

Syst. Nat. Gm. Tom. 2. 845.

Ait.

Ait. Hort. Kew. 2. 186.

Hill's Hort. Kew. 154.

Weston's Nurseryman, 1. 170.

Weston's Cat. 162.

Steel's Essay, 61.

Abercr. Bot. Arr. 2. 652.

Mesembr. 42, *fruticescens, ramulis triacanthis, Rand's Chels.* 133.

Mesembr. 20, *spinis ramosis, Mill. Gard. Dic. ed.* 7.

Ficoides 18, *Africana aculeis longissimis, et foliatis nascentibus ex alis foliorum, Boerb.*

Ind. alt. Hort. Lug. Bat. pars 1. p. 290.

Ficoides africanum erectum spinosum, Herman's Parad. Bat. p. 171.

Thorny fig-tharygold.

Native of the Cape of Good Hope.

Cultiv. 1714, *Ait. K.*

Flowers June to September.

OBSERVATIONS.

ROOT, perennial, fibrous.

PLANT, upright, woody, forming a thorny shrub, two or three feet high.

BRANCHES, opposite, arising from the axillæ of the leaves, expanding, or rather ascending, roundish-compressed, woody, and firm, throwing out in various places branching spines.

SPINES, or thorns; at first sight appearing as if terminal, but they soon cease

to be so, from the protrusion of young shoots from the alæ of the leaves they arose from ; branched, nearly horizontal, divaricating and trichotomous, each about half an inch or an inch long, subulate, very acute, resembling the spines of the common white thorn, but not so strong or pungent, covered with a greyish coloured bark, and beset with a pair of distinct, opposite, chiefly barren leaves, like those of the branches, but only a third as large.

LEAVES, opposite, distinct, slightly glaucous ; old ones, horizontally expanding, punctate ; (punctures, pellucid and smooth,) sub-triquetrous, with all the angles blunt, slightly swelled at the inner bases, fleshy, but very firm to the touch, and terminating in a very small white cartilaginous point, or harmless bristle.

FLOWERS, small and purple.

I HAVE no recent specimen of the flowers.

THIS is truly a singular plant in its family, being the only one of all its numerous tribe, with thorny shoots.

emargina- MESEMBRYANTHEMUM foliis subulatis
tum congestis subscabris, calycibus spinosis
(109) petalis emarginatis.

Species Plant. 692.

Syst.

Syst. Veg. Lich. Soc. 1. 383.

Syst. Nat. Gmel. Tom. 2. 845.

Ait. Hort. Kew. 2. 185.

Hill's Hort. Kew. 154.

Weston's Nurseryman, 1. 169.

Weston's Cat. 161.

Steel's Essay, 61.

Abercr. Bot. Arr. 2. 651.

Mesembr. 28, *purpureum scabrum staminibus expansis*, *Rand's Chelf.* p. 132.

Ficoides capensis, triangulari folio acuto, flore purpureo, *Petiv. Gaz. t.* 77. f. 3.

Ficoides afra fruticans folio triangulari scabro tenui flore violaceo, *Boerb. Ind. alt. Hort. Lug. Bat. Pars.* 1. p. 290.

I BELIEVE Miller does not describe this plant in the 7th ed. of his Dic. although it appears to have been an old inhabitant of Chelsea Physic Garden, from Rand's synonym above.

Notched flowered fig-marygold.

Native of the Cape of Good Hope.

Cult. 1732, Ait. K.

Flowers June and July.

OBSERVATIONS.

ROOT, fibrous, branched.

PLANT, shrubby, upright, firm, two or three feet high.

BRANCHES, woody, firm, ascending, alternate.

Y 3

LEAVES,

LEAVES, where the plant is not drawn up by warmth, crowded, sub-triquetrous, with blunt angles, linear, opposite, distinct, acute, covered with rough pellucid papulæ,—sometimes a quadrangular very rough leaf occurs, with almost opake papulæ.

FLOWERS, purplish, not large, but shewy from their numbers, opening in the forenoon.

PEDUNCLES, terminating the strongest branches, in bunches, in my specimens; nearly or quite destitute of bracteal leaves.

CALYX, five cleft, segments sub-equal, rather narrower than those of scabrum, three of the segments with membranaceous edges, of a paler colour than those of scabrum, (to which this plant is almost too nearly allied) the two remaining segments not membranaceous.

PETALS, of a deeper purple than those of scabrum, linear, numerous, often end-nicked, sometimes, although rarely, three dentated.

FILAMENTS, numerous, slender, somewhat converging, or upright.

ANTHERÆ, rather converging.

GERMEN, five angled.

STYLES,

STYLES, five, reflexing, with roughish surfaces, which I cannot observe in scabrum.

CAPSULE, five cell'd.

SEEDS, numerous.

M. EMARGINATUM produces its flowers very freely, almost at all ages,—scabrum never flowers while young, and very sparingly when old,—I never saw it in bloom but once.

*emarginatoides
(110)

MESEMBRYANTHEMUM, foliis, aggregatis distinctis triquetris, scabridopunctatis, albidis, acuminatis, caule erecto.

Shrubby white leav'd fig-marygold.

Native of

Introduced

Flowers August.

A new species.

OBSERVATIONS.

THE first time of my seeing this plant was at Mr. Lee's, I ask'd him if it was the M. emarginatum,—he assured me it was not; but did not tell me the name he had for it.—I obtained no specimen of it from him; it was just about opening its flowers, but I had no opportunity of examining them.

I HAVE since seen this plant in another collection, sent thither from Mr. Lee's, under the name of *Mesembryanthemum novum*, from whence I had the small specimen before me, which is not two inches long, and therefore too insignificant to draw any good characters from;—from it however I wish to have it known, I have drawn the above specific character, which I do not offer as a fair, much less a good one; but merely as the best it is in my power, to give. Nor do I know that the plant is sufficiently distinct from *emarginatum* to be established into a new species,—neither can I say in what principal particulars it differs from *emarginatum* and *difflexum*, (to which plants it seems nearest allied) except in its upright stem from the latter, and in its very white coloured leaves from both.

THE method of its flowering appears the same as that of *emarginatum*.

THE term *novum* was too vague to be continued; on which account I have called it *emarginatoides*, from its very great resemblance to *emarginatum*, but for so doing I shall possibly be censured.

scabrum

scabrum MESEMBRYANTHEMUM, foliis subulatis
(111) distinctis subtus undique muricatis,
calycibus muticis.

Spec. Plant. 692.

Gouan's Hort. Mons. 244.

Syst. Veg. Lich. Soc. 1. 383.

Syst. Nat. Gmel. Tom. 2. 845.

Ait. Hort. Kew. 2. 185.

Hill's Hort. Kew. 154.

Weston's Nurseryman, 1. 169.

Weston's Cat. 162.

Steel's Essay, 61.

Abercr. Bot. Arr. 2. 651.

Mesembr. 29. *purpureum, scabrum, staminibus*
collectis, Rand's Chelf. 132.

Mesembr. 17. *foliis subulatis subtus undique*
scabris, Mill. Gard. Dic. ed. 7? This
synonym may possibly belong to *emarginatum*,
but I think it does not; and Miller refers
to *Hort. Ciff.* 219, which Lin. in *Sp. Pl.*
692, also refers to, as his *scabrum*.

Ficoides afra folio triangulari, viridi, longo,
aspero, flore violaceo, Boerb. Ind. alt. Hort.

Lug. Bat. Pars. 1. p. 290.

Rough leaved fig-marygold.

Native of the Cape of Good Hope.

Cultivated 1732. *Ait. K.*

Flowers June to August.

OBSERVATIONS.

Root, fibrous, perennial.

Plant, shrubby, upright.

BRANCHES,

BRANCHES, crowded, opposite and alternate, longish, cylindrical, covered with a dark coloured bark.

LEAVES, triquetrous, subulate, more crowded, much greener, and covered, especially on the keel angles, with rougher, more projecting and more chrystalline, verucosities or papulæ, than those of emarginatum.

FLOWERS, much more rarely seen than those of emarginatum, fewer, and rather paler.

PEDUNCLES, on the only specimen I ever saw in bloom, and which is now in a recent state before me, three in number, and terminating the branch, smooth below, roughening upwards towards the calyx, with two foliaceous bractææ about the middle.

CALYX, five cleft, segments equal, three of them edged with dark coloured membranes, the remaining two plain.

PETALS, palish purple, numerous, linear, with from one to five irregular crenatures, or minute teeth at the points.

FILAMENTS, buff colour'd, short.

ANTHERÆ, buff colour'd, large. Pollen pale.

GERMEN, in the specimen before me, six or seven angled, smooth.

STYLES,

STYLES, six or seven, herbaceous, buff coloured.

CAPSULE, six or seven cell'd.

SEEDS, very small, ripe ones I have not seen.

deflexum MESEMBRYANTHEMUM foliis triquetris
(112) acutis glaucis, punctis obsolete scab-
riusculis, laciniis calycinis interioribus
membranaceis.

Ait. Hort. Kew. 2. 187.

Syst. Nat. Gmel. tom. 2. 845.

Bending fig-marygold.

Native of the Cape of Good Hope. Mr.

F. Maffon, *Ait. Kew.*

Introd. 1774. *Ait. Kew.*

Flowers July to October.

OBSERVATIONS.

ROOT, fibrous, branched.

PLANT, a small very low spreading or trailing shrub.

BRANCHES, crowded, opposite and alternate, arising from the axillæ of the leaves, at first ascending, but finally deflected or bent down towards the ground, in which particular the plant differs materially from *emarginatum*, to which in most other respects it is very closely allied.

LEAVES,

LEAVES, glaucous, opposite, distinct, triquetrous, subulate, of different lengths, punctate, scarcely to be called smooth, but nothing near so rough as those of *emarginatum*, nor so white as those of *emarginatoides*, which has erect branches.

FLOWERS, like those of *emarginatum*, but paler, and produced in the same manner, opening in a morning.

PEDUNCLES, long, compressed, smooth.

CALYX, five cleft, or five leav'd, segments nearly equal, three of them with membranaceous edges, the remaining two plain.

PETALS, numerous, pale purple, very narrow.

GERMEN, smooth, green, shining, five angled, as if truncate at top, with a hollow or navel.

FILAMENTS, numerous, converging into a conical or cylindrical figure in the centre of the flower, buff coloured and slender.

ANTHERÆ, ovalish, buff coloured.

STYLES, five, stout, subulate, long, expanding, rough above.

CAPSULE, five angled, five cell'd.

SEEDS, very numerous.

reptans **MESEMBRYANTHEMUM**, foliis triquetris
(113) acutis scabris, caule reptante.

Ait.

Ait. Hort. Kew. 2. 185.

Gmel. Syst. Nat. tom. 2. 845.

Creeping fig-marygold.

Native of the Cape of Good Hope. *Ait.*

Kew.

Introduced 1774. *Ait. Kew.*

Flowers June to August. *Ait. Kew.*

OBSERVATIONS.

I HAVE not seen this plant flower; in its triquetrous leaves and reptant stems, it is allied to *australe* and *crassifolium*.

I HAVE seen plants in the open air, in the summer season, extend their branches above a foot and an half every way, fixed firmly down to the ground at every joint by strong fibres.

M. REPTANS has leaves between papulose and tuberculated, they are much rougher, more glaucous, and more acutely subulate or pointed, than any other reptant species I have at present in memory;—the root is perennial, fibrous,—the branches angular and finally sub-ligneous.

australe MESEMBRYANTHEMUM, foliis subtri-
(114) quetris, punctulatis, connatis, obtu-
sifusculis, caule tereti repente, pedun-
culis obtuse ancipitibus, solitariis.

Ait.

Ait. Hort. Kew. 2. 187.

Syst. Nat. Gmel. tom. 2. 845.

Weston's Cat. 162. where it is said to be described by Miller.

New Zealand fig-marygold.

Native of New Zealand. Sir Joseph

Banks Bart. *Ait. Kew.*

Introduced 1773. *Ait. Kew.*

Flowers July and August. *Ait. Kew.*

OBSERVATIONS.

I HAVE not seen this plant flower, and have no specimen of it proper for description.

crassifo-
lium
(115)

MESEMBRYANTHEMUM, foliis semicylin-
dricis impunctatis connatis apice tri-
quetris, caule repente, semicylindrico.

Lin. Spec. Plant. 693.

Gouan's Hort. Monf. 244.

Syst. Veg. Litch. Soc. 1. 384.

Syst. Nat. Gmel. tom. 2. 845.

Ait. Hort. Kew. 2. 188.

Hill's Hort. Kew. 154.

Weston's Nurseryman, 1. 170.

Weston's Cat. 161.

Abercromb. Bott. Arr. 2. 653.

Steel's Essay, 61.

*Mesembr. 34, crassifolium repens flore pur-
pureo, Rand's Chels. 133.*

Mesembr.

Mesembr. 24. caule repente semicylindraco, foliis semicylindricis, levibus connatis, apice triquetris. Mill. Gard. Dict. ed. 7. where he gives the following synonym.

Ficoides africana reptans, folio triangulari flore saturate purpureo, Brad. Succ. p. 16. Tab. 38.

Thick leav'd fig-marygold.

Native of the Cape of Good Hope.

Cultivated 1734. Ait. Kew.

Flowers July and August.

OBSERVATIONS.

THE leaves of this plant, which are far from either succulent or thick, when compared with the grossness of many other plants of this tribe, are generally more of a triquetrous than a semicylindrical appearance.

FLOWERS, I have no specimens of, they are bright purple, terminate the lesser branches, and are seldom seen but on old plants.

M. CRASSIFOLIUM is a handsome plant, thickly furnished with leaves, and makes a fine appearance on a shelf, from which I have seen the branches of a plant, even in a sixty sized pot, hang a full yard.

THE branches of M. crassifolium are naturally prostrate and reptant, they are thickly

thickly furnish'd with leaves on every part, angular and slender,—herbaceous when young,—when old they become more tough or supple, and acquire somewhat of a ligneous nature,—when in contact with the earth, they send down many white fibres into it from every joint.

THE root of *M. crassifolium* is perennial and fibrous.

decum-
bens
(116)

MESEMBRYANTHEMUM, foliis sub-acinaciformibus levibus, glaucis, compresso-triquetris incurvatis, basi semicylindricis attenuatis, angulis obtusis, caule decumbente.

Weston's Cat. 162. where it is said to be described by Miller.

Decumbent fig-marygold.

Native of

Introduced

Flowers June to August.

OBSERVATIONS.

I AM not sure whether the following synonym belongs to this plant or not, but I am tempted to think it does.

Mesembr. 26. foliis acinaciformibus connatis levibus, caule decumbente, Mill. Gard. Dict. ed. 7. It can scarce belong to acinaciforme, and yet Miller's reference to the following

following synonym makes it at least doubtful.

Ficoides, seu ficus aizoides, africana, major, procumbens, triangulari folio, ensiformi. Boerb. Ind. alt. 1. 289, for this last synonym really does belong to the M. acinaciforme, notwithstanding what Miller may be supposed to have conjectured to the contrary.

IF we but for a moment admit Miller to have misapplied the synonym of Boerhaave, the matter will just amount to this :

BOERHAAVE's plant will be the same as acinaciforme Lin. and

MILLER's plant, the same as my decumbens.

AFTER all, No. 47 of Mil. Dic. ed. 7, may be decumbens, and the above synonym of Miller belong to acinaciforme.

SEE my further considerations and remarks on this head, under the synonymy of M. acinaciforme.

DESCRIPTION.

ROOT, fibrous ; fibres strong, divaricating, branched.

PLANT, a small shrub, with numerous, somewhat decumbent branches.

Z

BRANCHES,

BRANCHES, firm, woody, cylindrical, rather angulate, arising alternate and opposite from the axillæ of the leaves, expanding, finally shooting along in an almost horizontal or decumbent manner, often acquiring, in their early stages, a purplish tinge, and thickly covered with leaves.

LEAVES, opposite, rather crowded, distinct, very glaucous, punctate, (spots pellucid, smooth, small,)—somewhat arcuate, and obliquely bending back; some of them quite falcate, especially the old ones; most of them sub-acinaciform, or compressedly triquetrous. At the base, attenuate and semicylindric,—all the angles blunt, the keel one, gibbous, or hunched out from the middle to near the point, where it is suddenly contracted again, and terminates the leaf in a very fine, just perceptible, white, sometimes purple bristly point, which is inclined a little to one side, following the direction of the leaf;—the leaves are of different lengths, usually from three quarters of an inch, to an inch and a quarter long; often much more in young plants; some of them, in a specimen before me, measuring above two inches.

FLOWERS, bright purple, showy.

PEDUNCLES,

PEDUNCLES, long, often with a pair of bracteal leaves near the middle, which some may call barren branch leaves; for they are exactly like those of the branches, but are less, and wither away without producing any shoots from their alæ.

PETALS, numerous, linear.

GERM, five angled.

STYLES, five, appearing as if united below, and divaricating above.

CAPSULE, top shaped, acutely five cell'd, five angled; keels of the angles grooved.

SEEDS, numerous.

ADDITIONAL OBSERVATIONS.

I HAVE called this plant decumbens, for three reasons; the first and best is, because it is in many stages of growth a decumbent plant. The second is, because Weston in his Cat. 162, says it is described by Miller under the name of decumbens, which I have not yet found. The third is, the plant is known in several Nurseries about town by the name of decumbens.

IN several Yorkshire Nurseries and Gardens, this plant is called by the vague name of falcatum majus, a common hackneyed name for almost any in-

curved leav'd MESEMBRYANTHEMUM. Even near London, I have heard it applied to several, especially the present one, *M. glomeratum*, and my *M. cymbiforme*.

In the last catalogue but one, of Messrs. Gordon, Dermer, and Co. Nurserymen, mention is made of a *Mesembryanthemum* under the name of "*Mesembryanthemum decumbens*," "*prostrate fig-marygold*," which, in all probability, is the same as this plant.—In their last catalogue, which appears to have been compiled after the model of Mr. Aiton's *Hortus Kewensis*, the name of *Mesembryanthemum decumbens* does not occur.

glomera-
tum
(117)

MESEMBRYANTHEMUM foliis teretiusculis compressis punctatis, caule paniculato multifloro.

Lin. Spec. Plant. 694, who only gives one synonym, viz.

Mesembr. falcatum minus, flore carneo minore, *Dill. Elth.* 281, t. 213, f. 274.

The following synonyms belong to it.

Mesembr. glomeratum, *Syst. Veg. Lich. Soc.* 1. 384.

Mesembr. glomeratum, *Syst. Nat. Gmel.* Tom. 2. 845.

Mesembr. glomeratum, *Ait. Kew.* 2. 183.

Mesembr.

Mesembr. glomeratum, Hill's Hort. Kew.

154.

Mesembr. glomeratum, Weston's Nurseryman,

1. 170.

Mesembr. glomeratum, Weston's Cat. 162.

Mesembr. glomeratum, Steel's Essay, 61.

Mesembr. glomeratum, Abercr. Bot. Arr. 2.

653.

Mesembr. falcatum minus, flore carneo minore, Rand's Gbelf. 134.

OBSERVATIONS.

THIS charming little plant is not known so much as it ought to be ;—its very numerous and very beautiful flowers, (which are produced with the greatest certainty every season, so as to cover the plant with a bright purple bloom,) added to the uncommon facility which attends its propagation, even from the minutest cuttings, much merit the admiration of the curious in plants.

It is a very variable little plant, (but not in the least liable to be taken for any other species,) assuming appearances exceedingly different, according to the treatment it meets with, and according to its different stages of growth, and prefers a large portion of fresh air.

I have heard a *Nurseryman*, whom I have had occasion to mention more than

once in the course of these Observations, and who appears to plume himself not a little upon his knowledge of MESEMBRYANTHEMA, (especially the LINNÆAN species,) not only call this plant the *M. falcatum* of Linnæus, but after having been told to the contrary, insist upon its being so;—nay, unopen to conviction, even after my offering to explain the matter to him by a reference to the very figures cited by our much loved Master Linnæus, he has told me, that he is not to be taught by so young a Botanist as myself, the knowledge of a set of plants he has been accustomed to consider himself familiar with from his youth.

THE plants are distinguished with the greatest facility; *glomeratum* is full twice, oftener thrice, the size of *falcatum*—other differences out of the question. A child in Botany may see, and seeing, know the difference between them; nay, *glomeratum* is as much, or perhaps more like *decumbens*, than *falcatum*, but in every respect much slenderer, greener, and more upright.

DESCRIPTION OF GLOMERATUM.

Root, perennial, fibrous; fibres large, in proportion to the size of the plant, and but moderately branched.

PLANT,

PLANT, a small, very bushy, rather glaucous shrub, six inches, or a foot, or more high.

BRANCHES, erectish, often diffuse, and paniculate; round, whilst young, slightly angular, when old, covered with a brown bark, and for the most part opposite and crowded.

LEAVES, opposite, crowded, distinct, rather glaucous, punctate, (spots pellucid, round, oval, oblong and usually distinct, but sometimes confluent;) subtrigonous, compressed, with blunt angles, subulate, attenuate at the base, slightly incurved, sometimes almost acinaciform; from three quarters of an inch to an inch and an half long.

FLOWERS, very numerous, purple, like those of *M. deltoides*, but finer, and more handsome; expanding in the fore part of the day, in such profusion, as often to cover the surface of the plant; —making a fine appearance, particularly when contrasted with the beautiful yellow, white, and golden coloured blossoms of their kindred.

PEDUNCLES, longish, thickened upwards, each supporting one flower, forming a kind of divaricating panicle, which, after flowering, does not perish, but protrudes from the bosoms of its pro-

lific leaves, healthy rudiments of numerous branches, — the perennial sources of the future plant.

CALYX, quinquefid, segments sub-equal, or sometimes two of them less than the other three, and membranaceous all round, with sharp foliaceous points beneath the membranes.

PETALS, reddish-purple, linear, and numerous.

THE other parts of fructification I have not examined.

falcatum
(118)

MESEMBRYANTHEMUM foliis sub-acinaciformibus incurvis, punctatis distinctis, ramis teretibus.

Lin. species Plant, 694, who only gives the two following synonyms, viz.

Mesembr. falcatum, minimum, flor. purpureo-parvo, *Dill. Elth.* 288, t. 213, f. 276.

Ficoides afra folio triangulari, ensiformi brevissimo flore dilute purpurascente filamentoso, *Brad. succ. p.* 9, t. 42.

The following synonyms belong to *falcatum*.

Mesembr. falcatum, *Ait. Hort. Kew.* 188.

Mesembr. falcatum, *Hill's Hort. Kew.* 154.

Mesembr. falcatum, *Weston's Nurseryman*, 1. 170.

Mesembr. falcatum, *Weston's Cat.* 161.

Mesembr. falcatum, *Steel's Essay*, 61.

Mesembr.

Mesembr. falcatum, *Abercr. Bott. Arr.* 2. 653.

Mesembr. falcatum minimum flore purpureo parvo, *Rand's Chelf.* 134.

Mesembr. 25. foliis acinaciformibus distinctis levibus ramis teretibus, *Mill. Gard. Dict.* ed. 7.

Ficoides 19, afra folio triangulari brevissimo, flore dilute purpurascete, filamentoso, *Boerb. Ind. alt. Hort. Lug. Bat. pars. 1. page 290.*

OBSERVATIONS.

MR. AITON in his *Hortus Kewensis* has well remarked that the trivial name of *Mesembryanthemum falcatum*, is prefixed to the specific characters of *Mesembryanthemum acinaciforme* in *Syst. Veget.* 469.

AND THIS mistake, by some very strange and unaccountable oversight, is copied verbatim, both in the *Systema Vegetabilium*, as translated by the Litchfield Society, and in the last edition of the *Systema Naturæ* lately published by Professor Gmelin.

CONSEQUENTLY the *Mesembryanthemum falcatum* of both those works is the *Mesembryanthemum acinaciforme* of Linnæus, and the *Mesembryanthemum falcatum* of Linnæus (*notwithstanding its name is inserted in both those authors,*)

authors,) is not described by either of them.

Small fickle leav'd fig-marygold.

Native of the Cape of Good Hope.

Cult. 1727. Ait. K.

Flowers June to September.

DESCRIPTION.

ROOT, fibrous, small, and branched.

PLANT, a very low, very bushy, divaricating, and almost decumbent shrub, rarely more than six or eight inches high.

BRANCHES, opposite, slightly angular, arising from the axillæ of the leaves, divaricating and densely crowded, often bending down from the side of a pot, and sometimes extended a foot in length when in that direction.

LEAVES, very minute and much crowded, opposite, distinct, glaucous, fleshy, punctate, (punctures smooth, pellucid,) attenuate at the base, very gibbous on the keel, sharply incurved or falcate, near a quarter of an inch long, and ending in an acute white, just perceptible bristly point, which observes the direction of the leaves.

FLOWERS, purple, large for the size of the plant, opening in the morning.

PEDUNCLES,

PEDUNCLES, each supporting one flower, terminating the branches, short.

CALYX, five cleft, segments nearly equal, two of them foliaceous, acutely pointed and plain; the remaining three with membranaceous edges and acute points.

PETALS, purple, linear, numerous, and end-nicked.

FILAMENTS, numerous, slender, of a dilute purple colour; converged.

ANTHERÆ, yellow.

STYLES, five, yellowish-green, subulate, long, for the size of the flower.

GERM,

CAPSULE,

SEEDS.

} I have not examined.

PECULIARITIES.

THE leaves are sometimes sufficiently incurved to form one half of a circle, which is a much greater degree of curvature than any other *Mesembryanthemum* I am acquainted with, is found to possess; and they are less than those of any other *Mesembryanthemum* I have seen, except perhaps those of *M. ciliatum*.

ciliatum **MESEMBRYANTHEMUM**, foliis oppositis connatis, semiteretibus, stipulis membranaceis reflexis, laceris, ciliiformibus.

(119)

Ait.

Ait. Hort. Kew. 2. 179.

Syst. Nat. Gmel. tom. 2. 843.

Ciliated fig-marygold.

Native of the Cape of Good Hope. *Ait.*
Kew.

Introduced 1774. *Ait. Kew.*
Flowers

OBSERVATIONS.

THIS is a charming little shrub, with
very small green triquetrous leaves.

THE CILIAE, are not always observable.

IT appears nearer allied to *falcatum*,
and perhaps *deltoides*, than any of the
other species.

I HAVE not seen it flower.

IT has a perennial fibrous root, and
slender, but firm, nearly upright,
straight branches, which are thickly
adorned, with green punctate, very
short, somewhat chubby leaves.

deltoides MESEMBRYANTHEMUM, foliis deltoidi-
(120) bus triquetris, dorso et lateribus mu-
ricatis, impunctatis distinctis.

Mesembr. deltoides, *Sp. Pl.* 690.

Mesembr. deltoides, *Syst. Veg. Lich. Soc.* 1.
383.

Mesembr. deltoides, *Syst. Nat. Gmel. tom. 2.*
844.

Mesembr.

Mesembr. deltoides, *a*, *Ait. Hort. Kew.* 2.
183.

Mesembr. deltoides, *Hill's Hort. Kew.* 154.

Mesembr. deltoide 1. *floribus roseis odoratis*,
et dorso et lateribus muricatis, *Weston's*
Nurseryman, 1. 169.

Mesembr. deltoide 3. *minus*, *Weston's Cat.*
161. *which answers to 1. or deltoides of*
Lin.

Mesembr. deltoides, *Steel's Essay*, 60.

Mesembr. deltoides minor *Aberc. Bott. Arr.*
2. 651.—*making it the last of the three*
delta leav'd sorts; whereas it ought to have
been the first or deltoides Lin.

Mesembr. deltoides, *Gouan's Hort. Monsp.*
244.

Mesembryanthemum 23, *deltoides et dorso, et*
lateribus muricatis minus, *Rand's Chelf.*
132.

Mesembryanthemum, *caulescens, foliis del-*
toidibus triquetris dentatis, *Mill. Gard.*
Dict. ed. 7.

Ficoides 21. *seu ficus aizoides africana folio*
triangulari crasso, brevi, glauco ad tres
magines aculeato, *Boerb. Ind. Alt. Hort.*
Lug. Bat. Pars. 1. p. 290?

Small delta leav'd fig-marygold.

Native of the Cape of Good Hope.

Cult. 1714. *Ait. Kew.*

Flowers May to August.

OBSERVATIONS.

I HAVE no recent specimen of this plant in flower for description.

deltoides majus. THERE IS a variety of it, larger in all its parts, which I believe I have not seen, at least not in flower.

THE following synonyms belong to it.

Mesembr. deltoides β. *Sp. Pl.* 690.

Mesembr. deltoides β. *Ait. Hort. Kew.* 2. 183.

Mesembr. deltoide 2. *majus*, *dorso et lateribus muricatis majus*. *Weston's Nurseryman*, 1. 169.

Mesembr. deltoide 2. *majus*, *Weston's Cat.* 160.

Mesembr. deltoides major, *Abercr. Bott. Arr.* 2. 651.

Mesembr. 25. *deltoides*, *et dorso et lateribus muricatis majus*, *Rand's Chelf.*

Great delta leaved fig-marygold.

Native of the Cape of Good Hope.]

Cultivated

Flowers

OBSERVATIONS.

I HAVE no certain specimen of this plant.

Dillenius, and (in this instance,) his follower Rand appear to have looked upon it as a distinct species, which it possibly may be.

MILLER

MILLER does not appear to have noticed it, at least not in the 7th ed. of his Dict. which is the only ed. I have by me at present.

THE NEXT mentioned plant which Linnæus also reduced to a mere variety of his *deltoides*, (making it var. γ .) I know to be a distinct species, for I have raised some scores of it from seeds, produced by plants, which grew in close contact with Linnæus *deltoides*, all of which prov'd the same as their parents in every respect, so far as concerns their leaves and shoots;—their flowers I have not seen.

caulescens MESEMBRYANTHEMUM, foliis albidis
(121) deltoidibus lateribus minime dentatis,
angulo carinali integris.

Mesembr. deltoides γ . *Spec. Pl.* 690.

Mesembr. deltoides γ . *Ait. Hort. Kew.* 1.
183.

Mesembr. deltoide 3, non dorso sed lateribus
muricatis, *Weston's Nurseryman*, 1. 169.

Mesembr. deltoide, no. 1. *Weston's Cat.* 161,
whereas it ought to have been 3 or γ . *Lin.*

Mesembr. deltoides, *Abercr. Arr.* 2. 651.
making it the first of the three delta leaved
sorts, whereas it ought to have been the last
or γ . *Lin.*—See my remark under *deltoides*
on this subject.

THUS

THUS have those very useful translators *Weston* and *Abercrombie*, one in his *Cat.* 164, the other in his *Arr.* 2. 651, made the *deltoides* γ . rank in the place that ought to have been occupied by the *deltoides* α . and vice versa, which confusingly causes their *M. deltoides*, to be my *caulescens*; and my *caulescens* to be the same as their *deltoides*, which would have been avoided if they had properly followed the text of *Linnaeus*, as *Mr. Aiton* in his *Hort. Kew.* has rightly done.—A moment's consideration, (if the thing is worth so much trouble,) will explain this business; which, although extremely trifling, I have had a pleasure in attempting to elucidate.

IN *Weston's Nurseryman* however, the plants are rightly ranked; by which means the confusion is avoided, in it too, their characters are well translated into English.

Mesembr. 24. *deltoides*, non dorso, sed lateribus muricatis, *Rand's Chelf.* 132.

Mesembr. 12. *caulescens*, foliis deltoidibus, lateribus, minimè dentatis, *Mill. Gard. Dict. ed.* 7.

Ficoides afra, folio triangulari-glaucis, brevissimo crassissimo, margine non spinoso, *Boerb. Ind. alt. Hort. Lug. Bat. Pars.* 1. p. 290.

Smooth keel'd delta leav'd fig-marygold,
Native of the Cape of Good Hope.

Cul.

Cultivated

Flowers May—July.

OBSERVATIONS.

I HAVE no recent specimen of this plant in flower for description.

THE plant is taller, more upright, more spreading, and every way larger, than either the *deltoides* or *deltoides* β Lin.

THE leaves are larger, whiter, longer in proportion, perfectly smooth or intire on the back, or keel angle, and scarcely to be called even slightly denticulate, on the edges;—they are rather *subundulato-denticulatis*.

THE flowers are larger, of a pale rosy-purple colour, numerous, and open in a morning as soon as the sun shines strong upon them, agreeably scented, and smell like new blown May, which is well known to be the common name for the White Thorn Tree, or Hawthorn, which is the *Crategus monogyna* With. Bot. Arr. 2. 511,—a scent admired by all.

PECULIARITY.

I do not recollect any other *Mesembryanthemum* with odoriferous flowers.

ADDITIONAL OBSERVATIONS.

I HAVE selected the term *caulescens* for this plant, on two accounts: first, because it is pretty applicable to the plant, (which acquires more of a stem than either *deltoides* or *deltoides* β Lin.) and secondly, because it is the name I have seen the plant stand by, in some edition of the *Abridgement of the Gardener's Dictionary*.

MILLER's names and ideas on botanical subjects, I have already professed to hold in respect, and I cannot help lamenting, that Linnæus should have rescinded them so much, as he is well known to have done in various instances, not only in this genus, but in others;—in few, more unmercifully than in *Aloe*;—in few, with so little success.

As a friend to the science of Botany, and as a lover of its cause, I cannot help exclaiming, what a pity it is, that the most permanent and striking Linnæan varieties of plants are not yet suffered to rank as things specifically different. AND I wish in imitation of Mr. Curtis, (in several parts of his elegant works) that the leading varieties were restored to the specific names and descriptions, constructed.

constructed for them by Miller and others, and again suffered to rank and associate under their respective genera, as plants specifically different.

A REFORMATION so salutary, I am convinced, would not only be consistent with nature, but be productive of perspicuity and good to the science of Botany.

For as several things stand now, suppose a young student in Botany to meet with some leading variety of a plant, to which he is a stranger, and likewise suppose he attempts to make it out in the works of Linnæus; what circumstance is more likely to occur to him, than the mistaking this strong variety for some established species it really does not belong to? Which species therefore he fancies himself acquainted with;—what an unfortunate error!—How baneful it may prove to all future advancement in the science he cultivates!—For, a little while after, supposing him to meet with the real species he mistakenly believed himself possessed of,—he examines it, finds it different from the former, and in all probability, esteems it another of a different kind.

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IN this way his errors increase; they redouble upon him; and at length involve him in a maze too intricate for his powers to extricate him from. In which situation, he applies to a friend of greater botanical knowledge than himself, who kindly points out his mistakes, and the compound nature of the circumstances, which occasioned his perplexity; disheartened at which, his fears magnify the difficulties before him, and embarrassed, he gives up his botanical pursuits with disgust.

AGAIN I cannot help lamenting what a pity it is, nay, what a loss to the science of Botany, that circumstances so apparently trifling, should, in any degree, retard the increase of votaries for botanic fame.

AND I have known causes no greater than the variation of plants in their leaves, from smooth to hairy, from dentate to entire, &c. perfectly sufficient to give birth to, or occasion the above-mentioned inconveniences, where such principal variations were not described as plants specifically distinct.

EXAMPLES of this nature fall daily under the eyes of practical Botanists: it is unnecessary to point any out to them—but what is a young student in Botany,

tany, (in his noviciate perhaps,) to think, when he examines such incongruous descriptions, as any plant, (no matter what) foliis lucidis, and another placed under it as a variety, foliis opacis?—or any plant, foliis dentatis, and under it another as a variety, foliis integerrimis?—and many other oppositions of a similar nature?

No one is by any means for having the lesser and trifling varieties of plants, particularly those of size and taste, elevated to the rank and dignity of species, (as was the fashion in the latter end of the last and beginning of the present century;) that indeed would be an attempt to replace the rubbish in the Augean stables, which nothing short of the Herculean labours of another Linnæus could effectually remove!

No; it is only to be wished in imitation of Miller, Curtis, and several very eminent foreign Botanists, that the permanent or principal Linnæan varieties, were restored to their specific names and descriptions, and again suffered to rank and associate under their respective genera, as plants specifically different, especially those which relate to the structure and shape of the leaves,

stipulae, bractea, and parts of fructification; and which bear unchanged, the almost infallible test of being raised from seed.

BUT slight accidental variations it must ever be remembered, all plants, even the most distinct, may at times be liable to, when raised from seed. In such cases, the judgment of the experienced Botanist only, is capable of deciding.

AND on such points, who has had such great opportunities and experience as Miller?

AND who has taken so much pains to explain them?

IN whose judgment therefore ought we better or more safely to confide?

A REGULATION so salutary, under proper bounds and restrictions, I am persuaded, will sooner or later take place, and indeed, has already made some propitious beginnings under several able hands.

IT is chiefly from practical Botanists, that we must expect its progress and continuance, which I am firmly persuaded, will finally render abortive and eradicate the inconveniences to the student, which I have above particularly pointed

pointed out, and make the study of Botany far easier than it now is.

INDEED I speak from actual experience, and have only enumerated the identical circumstances, which repeatedly proved inextricable and puzzling to myself, when I first endeavoured to acquire botanical information.

IN THESE OBSERVATIONS, however inadequate to the task, I have endeavoured to restore, what are considered as the principal varieties of *Mesembryanthema*, to the specific ranks and descriptions allotted them by Dillenius and Miller.

DILLENIIUS surely was a judge, and a man of practice;—did not the great Linnæus himself say of his *Hortus Elthamensis*, in which the very *MESEMBRYANTHEMA* I speak of, are described and figured?

“ EST OPUS BOTANICUM QUO ABSOLUTUS
“ TIUS MUNDUM NON VIDI.”

Pult. Prog. Bot. 2. 171.

I AM aware, that against me it may be urged, with an appearance of reason, that such varieties as are worthy the attention of a Botanist, either are already, or may be described under the species they belong, as well and as effectually,

fectually, as if they were described as distinct species.

BUT what better are such descriptions, than the long names (as they may be called,) or specific characters of all the authors, who preceded the BRIGHT, THE INDESTRUCTIBLE INVENTION OF TRIVIAL NAMES, as their truly great author thought proper to call them? How improper for the purposes of conversation on botanical topics!

IN answer to this, I am likewise aware it will be said, that in addition to their descriptions, short, sub-trivial names, either are often, or may often be applied,—as in the numerous and strong varieties of *Aloe perfoliata* Lin. and *Medicago polymorpha* Lin.

BUT do not these sub-specific names, if they may so be called, perplex by their numbers? Do they not also sometimes include less varieties? And are they not thereby rendered almost as long and inconvenient for the purposes of conversation, or rather verbal communication, as the specific descriptions of the old authors? Such, for instance, as those in the Index alter of the great Boerhaave, so often referred to in these OBSERVATIONS, which run by a score in succession, “ *Ficoides, afra, sue ficus*
“ *aizoides,*

"*aizoides*, &c." and which are therefore too long to be either pleasant, or very convenient for a subject of Botanical conversation.

BUT whither am I hurried?—what an impolitic digression! what degree of criticism, am I not unwisely exciting to action?

*mutabile MESEMBRYANTHEMUM foliis triquetro-
(122) compressis sub-acinaciformibus, distinctis, punctatis, angulis integris cartilagineo-marginatis.

Pale purple fig-marygold.

Changeable ficoides.

Native

Introduced

Flowers July to September.

A new species.

OBSERVATIONS.

I BELIEVE this is a new species, unless it should be conjectured the 20th sort, in Boerh. Ind. Alt. 1, 290.

I HAVE heard it called mutabile, at Mr. Lee's, and in other places, on which account, I continue that term, in preference to the more obvious title marginatum, which otherwise I should have applied to it.

DESCRIPTION.

ROOT, fibrous, branched, perennial.

PLANT, a small dense upright branched shrub.

BRANCHES, thickly covered with shoots and leaves, the former arising opposite or alternate from the axillæ of the latter, ascending, or patent, whilst young herbaceous and angularly anticipious; deriving sharp angles from the keels of the leaves, rounder and woody when old.

LEAVES, opposite, ascending, not an inch long, greenish, covered with roughish pellucid punctures, sub-acinaciform, or, compressed triquetrous, attenuate at the base, and gibbous on the keel angle upwards, terminating in a small acute bent bristly point, crowding each other, and every way edged with a thin firm, white, cartilaginous margin, which is nearly smooth, and seems composed of a congeries of confluent semipellucid impunctations.

FLOWERS, pale, dilute purple, largish, but by no means showy, terminating the branches.

PEDUNCLES, short, solitary, mostly clothed with imbricated bracteal leaves, but sometimes only furnished with one pair

pair of leaves, which exactly resemble the leaves of the branches, but are rather less.

CALYX, five parted, segments nearly equal, stout, three of them with membranaceous edges, the remaining two nearly destitute of membranes.

PETALS, numerous, extremely narrow, or almost capillary, outer ones whitish below, pale dilute purple above; inner ones quite white, with purple tips, some of them almost as narrow as the filaments.

FILAMENTS, numerous, capillary, uncommonly slender, and converging.

ANTHERÆ, very small, buff coloured, pollen yellowish.

GERMEN, large, five angled, with a hollow or navel at top.

STYLES, five, small and extremely short, greenish-yellow and expanded.

CAPSULE, very large and fleshy, depressed, with a large hollow or navel at top, five cell'd, obtusely five angled, angles with grooved lines along the keels.

SEEDS, rather few in number, but of a very large size for a *Mesembryanthemum*, and lodged in five cells.

REMARK.

I HAVE heard this plant called by the stupid name of *dolabriforme minus* in a Yorkshire nursery.

filamento- MESEMBRYANTHEMUM, foliis equitateri
fum triquetris acutis sub-punctatis, sub-con-
(123) natis, angulis scabris, ramis hexagonis.

Lin. Sp. Pl. 694.

Syst. Veg. Lich. Soc. 1. 384.

Syst. Nat. Gmel. tom. 2. 845.

Ait. Hort. Kew. 2. 189.

Hill's Hort. Kew. 155.

Weston's Nurseryman, 1. 170.

Weston's Cat. 161.

Steel's Essay, 61.

Abercr. Arr. 2. 653.

Mesembr. 48, *falcatum*, *majus flore purpureo*,
mediocri, *Rand's Chelf.* 133.

Thready fig-marygold.

Native of the Cape of Good Hope.

Cultiv. 1732. *Ait. Kew.*

Flowers July to September.

OBSERVATIONS.

Root, fibrous, perennial.

PLANT, trailing upon the ground, diffuse.

BRANCHES, scarcely to be called six angled, being chiefly semicylindric or triangular, often purplish and crowded.

LEAVES,

LEAVES, equilaterally triquetrous, an inch and an half long, angles edged with a just perceptible cartilaginous margin, which is rough to the touch, and finely ferrulate when nearly viewed, and on the keel angle largest and coarsest.

FLOWERS, terminating the lesser branches, solitary, not small, but rather to be called largish, purple, pretty, but not showy; I have no recent ones for description.

ferratum MESEMBRYANTHEMUM, foliis subulatis
(124) triquetris punctatis distinctis, angulo
carinali, retrorsum ferratis flore acetabuliformi luteo.

Lin. Spec. Plant. 696. who refers to the three following works, viz.

Hort. Cliff. 218. No. 15, and

Royen. Lugd. Bat. 284, and

Mesembr. ferratum flore acetabuliformi luteo.

Dill. Eltb. 249. t. 192, f. 238.

The following synonyms also belong to it.

Syst. Veg. Lich. Soc. 1. 384.

Syst. Nat. Gmel. Tom. 2. 846.

Weston's Nurseryman, 1. 171.

Weston's Cat. 162.

Abercromb. Bott. Arr. 2. 654.

Yellow cape fig-marygold, with a light notch'd
leaf. *Pet. Gaz.* p. 8. tom. 78. f. 2.

Mesembr.

Mesembr. 19, ferratum, flore acetabuliformi luteo, Rand's Chelf. 132.

Mesembr. 29. foliis subulatis triquetris, angulo carinali, retrorsum serratis, Mill. Gard. Dict. ed. 7. Miller only gives two synonyms, one to Hort. Cliff. 218,—the other is

Ficoides africana, folio longo, triangulari-incurvo, caule purpureo. Tourn. Aët. Par. 1705, which possibly may belong to my lacerum, which is the next plant described in these Observations, and has a purple flower, and often a purple stem.

THE following synonym seems the same as this of Tournefort, and may belong to *ferratum*, or, possibly my *lacerum*, but as Miller gives the synonym of Tournefort under *ferratum*, I incline to give the following, which appears the same.

Ficoides afra, folio, triangulari, longo, succulento caulibus rubris.—Boerb. Ind. Alt. Hort. Lug. Bat. Pars. 1. p. 290.

Yellow ferrate fig-marygold.

Native of the Cape of Good Hope.

Introduced before 1706, when it was cultivated by Mr. Gardener of the Temple Garden. Pet. Gaz. Tab. 78. fig. 2.

Flowers June.

OBSERVATIONS.

THIS plant I have never been fortunate enough to behold, it appears to come pretty near my lacerum, from which however it differs in having a yellow flower, and possibly in many other particulars.

It is enumerated in the two accounts of Chelsea plants which I refer to, viz. Mill. Dict. and Rand's Chelf. but it does not appear to have been at Kew, at least neither Dr. Hill nor Mr. Aiton make any mention of it in their catalogues of Kew Garden.

It appears to have been cultivated at Eltham, by the above reference to the Hort. Elth. and I think I have seen it enumerated in a recent catalogue of plants in the garden of —— Blackburn, esq. at Orford.

AND Petiver mentions having received it in flower in June 1706, from Mr. Gardener of the Temple Garden, vide Pet. Gaz. p. 8. tom. 78. f. 2.

HOWEVER common it may have been in the English gardens formerly, it is now become a very rare plant.

**lacerum* MESEMBRYANTHEMUM, foliis connatis,
(125) obsolete punctatis glaucis, compresso-
triquetris acuminatis, angulo carinali,
laceris, petalis purpureis.

Purple

Purple ferrate fig-marygold.

Native of

Introduced

Flowers August and September.

A new species.

OBSERVATIONS.

I HAVE no recent specimen of lacerum in flower, but I have seen many plants of it in that state lately.

ROOT, fibrous, perennial.

PLANT, branched, shrubbyish, allied to ferratum and filamentosum.

BRANCHES, angulose, about a foot long, incapable of supporting themselves long in an erect posture.

LEAVES, mostly connate, near two inches long, glaucous, punctate, (punctures small, irregular, obsolete,) expanding, opposite, compressedly triquetrous, rather crowded, acuminate or ending in a very fine white cartilaginous point, edged or bordered on all sides with a fine just perceptible cartilaginous margin, which on the keel angle, is broader and ferrulate, or rather raggedly torn, or irregularly broke or lacerate, whence my trivial name.

FLOWERS, large, showy, of a fine purple colour.

PEDUNCLES,

PEDUNCLES, terminating the branches, short.

THE other parts I have had no opportunity of examining.

THIS plant appears very closely allied to *ferratum*, but differs in its purple flowers, and perhaps many other points. See my account of *ferratum* above.

*spectabile
(126) **MESEMBRYANTHEMUM** foliis perfoliatis longissimis glaucis punctatis integerrimis, triquetris, apice subulatis, caule lignoso ascendente.

Great purple flowered fig-marygold.

Native

Introduced

Flowers July to October.

A new and most beautiful species.

OBSERVATIONS.

ROOT, strong, fibrous, branched.

PLANT, shrubby, not erect.

BRANCHES, arising opposite and alternate from the axillæ of the leaves, rather crowded, but not so much so as those of *equilaterum*, (the plant next but one described,) generally ascending, but sometimes almost decumbent;—whilst young, stout, greenish, or purplish-green, and angulate;—when old,

B b

long,

long, brown, woody, strong, and cylindrical.

LEAVES, of different lengths, according to their own ages, and that of the plant ;—in a fine young specimen before me, (given by the Foreman of Mr. Curtis's Botanic Garden) which consists of two principal ascending branches, each measuring about a foot ; the leaves are from two, to even five inches long, and not a quarter of an inch broad ;—young leaves usually ascending, incurved, very glaucous and punctate ; punctures pellucid, very numerous and well defined ;—old leaves, expanding, or expanded, or in some instances recurved, glaucous and punctate,—all of them opposite, connate, or rather perfoliate, and as if swelled just below the base, where they unite, and subulate above ;—triquetrous, slightly compressed, angles very intire ; the keel one sometimes slightly cartilaginous in the young leaves.

FLOWERS, I have often seen at Kew, (but have no specimen of them,) solitary, very large and specious, bright purple, making a fine contrast, with the very glaucous leaves, and purple and deep brown branches of the plant.

pugioni-

pugioni-
forme
(127)

MESEMBRYANTHEMUM foliis alternis sub-
ulatis, triquetris longissimis impunc-
tatis.

Species Plant. 699, where *Lin.* gives the
five following synonyms, which I have not
by me to examine.

Hort. Cliff. 216, *No.* 2.

Hort. Upsal. 129.

Royens. Lugdb. 281.

*Mesembr. folio pugioniformi, flore aureo stra-
mineo, Dill. Elth.* 280, t. 210. f. 269.

*Ficoides capensis, caryophylli folio, flore aureo
specioso, Brad. Succ.* 2. p. 5. t. 14.

The following synonyms likewise belong to this
plant,—I have examined them.

Mesembr. pugioniforme, Lich. Soc. 1. 385.

Mesembr. pugioniforme, Syst. Nat. Tom. 2.
846.

Mesembr. pugioniforme, Ait. Hort. Kew. 2.
196.

Mesembr. pugioniforme, Hill's Hort. Kew.
155.

Mesembr. pugioniforme, Steel's Essay, 62.

Mesembr. pugioniforme, Weston's Cat. 162.

Mesembr. pugioniforme, Weston's Nurseryman,
1. 172.

Mesembr. pugioniforme, Abercr. Bott. Arr. 2.
655.

*Mesembr. 45, pugioniforme folio amplo, stra-
mineo, Rand's Chelf.* 133.

Mesembr. 46, *foliis alternis subulatis triquetris longissimis*, *Mill. Gard. Dic. ed. 7.*

Ficoides 1. *Afra, arborescens erecta, folio triangulari, longissimo, confertim nato, purpurascens, flore luteo magno*, *Boerb. Ind. alt. Hort. Lug. Bat. pars 1. p. 289*, where he gives the following synonym.

Aster, Aizoides, Capitis Bonæ Spei, Zanon, Istoria Botanica, 35—1675.

Dagger leav'd fig-marygold.

Native of the Cape of Good Hope.

Cult. 1714, Ait. K.

Flowers May to Aug.

OBSERVATIONS.

I HAVE no specimen of this elegant, and very singular plant for description; it possesses many characters peculiar to itself.

It forms a very handsome little shrub, particularly when it keeps erect, which it sometimes does, and supports its branches, (which are crowned above with thick tufts of fine long leaves,) in an ascending posture,—but it is often incapable of supporting itself erect, especially when drawn up in a house.

PECULIARITIES.

THE only shrubby sort with alternate leaves.

LEAVES,

LEAVES, the longest and most elegant of all *Mesembryanthema*, pugioniform, triquetrous, nearly upright, impunctate, glaucous, alternate, and more crowded than in any other species.

FLOWERS, very specious and yellow, larger than those of any other sort I have seen bloom, very narrow petal'd, and like those of *M. elongatum* of these Observations.

ADDITIONAL OBSERVATIONS.

CUTTINGS of *M. pugioniforme* strike root with great difficulty; but I have struck them without bottom heat, and very late in the year, even in a greenhouse.

M. PUGIONIFORME very much dislikes the knife; I have known three very fine and promising young plants, in as many separate Collections, totally destroyed, by lopping the principal shoot off, for the purpose of propagation, although two of the three plants had very promising little buds or eyes beneath the wounded parts.

THOSE who wish to encrease *M. pugioniforme* from cuttings, would do well to select rather small than large shoots, —separate them from the parent plant with a sharp knife,—bruise or handle them as little as possible,—plant them

in a mixture of light earth and broken pieces of garden pots made small, keep them in a stove in the shade, and water them very sparingly.

M. PUGIONIFORME, frequently perfects very fine seeds, and is readily increased that way.

pugioni- I HAVE lately received (amongst other
niforme succulent plants,) from a friend in
short Yorkshire, a plant, which was raised
leav'd last year from Cape seeds, and which is
like the M. pugioniforme in every re-
spect, except in having much shorter
leaves,—it has not yet produced flow-
ers, and will in all probability prove the
same.

IN the spring of the year 1794, I had a specimen given me, (not in flower,) exactly like this, where it came from I have now forgot,—they are both most likely pugioniforme in a stunted state.

*equilate- MESEMBRYANTHEMUM, foliis confertis,
rum sub-connatis, longis, obsolete-punctatis-
(128) sub-equilateri-triquetris, integerrimis,
caule, angulato sub-radicante, prostrato.

Long green leav'd procumbent fig-mary-
gold.

Native

Introduced

Flowers

OBSERVATIONS.

THIS is a new and very fine species of *Mesembryanthemum*, the first time of my seeing it was at Mr. Lee's, from whence it was sent to a gentleman's collection by the name of *exilium*, a term too vague to be continued, whilst the nearly equilateral structure of the leaves points out a better and more obvious one, but if the term *exilium* had been in print, I should have continued it.

I HAVE been told, it is a native of the country about Botany Bay, and the only *Mesembryanthemum* found in that part of the world, and that it was named *exilium*, or an exile, because remote, or as if banished by nature, from the country of its kindred, the Cape of Good Hope.

BUT are not *nodiflorum*, *chrysellinum*, *australe* and others, also the productions of countries distant from the Cape?

IT appears in its habit, and outward structure, nearer allied to that noble species *M. pugioniforme* than any *Mesembryanthemum* I have hitherto had the opportunity of examining.

MAY it not therefore be the same as the

species raised from what are called Botany Bay seeds by Mr. Colvil, nurseryman, in the King's Road, which I shall notice more fully in my section "Incertæ tribus."

DESCRIPTION.

ROOT, fibrous, branched.

PLANT, a slender trailing shrub.

BRANCHES, long, angular, quite herbaceous when young, when old much slenderer, weaker, and more crowded than those of *spectabile*, arising opposite or alternate from the *alæ* of the leaves, at first ascending, but soon becoming almost prostrate; often emitting a pair of radicles from the joints.

LEAVES, almost green, scarce to be called connate, in the plant before me from two to three inches and an half long, triangular, nearly equilateral, but sometimes rather compressed; smooth, intire, obsoletely punctate, and more crowded than those of *spectabile*, but not near so much so as those of *pugioniforme*.

FLOWERS, I have not seen.

edule
(129)

MESEMBRYANTHEMUM, foliis equilateri triquetris, acutis strictis impunctatis connatis carina subferratis, caule ancipiti.

Lin.

Lin. Spec. Plantarum 695, where he gives the three following synonyms.

Mesembr. falcatum majus, flore amplo luteo.

Dill. Elth. 283. t. 212. f. 272.

Ficoides seu ficus aizoides africana major procumbens triangulari foliis, fructu maximo eduli.—*Herm. Lugdb.* 244. t. 245.

Morison's Historia Plantarum, 3. p. 506. f. 12. t. 7. f. 1.

The following synonyma also belong to *M. edule*.

Syst. Veg. Lich. Soc. 1. 384.

Syst. Nat. Gmel. tom. 2. 846.

Ait. Hort. Kew. 2. 190.

Hill's Hort. Kew. 155.

Steel's Essay, 61.

Weston's Cat. 162.

Weston's Nurseryman, 1. 171.

Abercr. Arr. 2. 653.

Mesembr. 47, *falcatum majus flore, amplo luteo*, *Rand's Chelf.* 133.

Mesembr. 27, *Mill. Gard. Dict. ed.* 7.

Ficoides 3. *seu ficus aizoides africana major procumbens triangulari folio, fructu maximo edule*, *Boerb. Ind. alt. Hort. Lug. Bat. Pars.* 1. p. 289.

Eatable fig-marygold. Hottentot's figs.

Native of the Cape of Good Hope.

Introduced 1690. *Ait. Kew.*

Flowers July and August. *Ait. Kew.*

OBSERVATIONS.

I HAVE never seen the flowers of this fine looking plant ; I believe it rarely produces them in this country, and only from very old plants ; they are said to be very shewy.

forficatum MESEMBRYANTHEMUM foliis acinaciformibus obtusis impunctatis, connatis, carina subserratis, caule ancipiti.
(130)

Lin. Sp. Pl. 691, who gives no synonym, says he never saw its flowers, and that it is allied to *M. acinaciforme*.

Syst. Veg. Lich. Soc. 1. 384.

Syst. Nat. Gmel. 2. 846.

Ait. Hort. Kew. 2.—189, but gives no time of flowering.

Hill's Hort. Kew. 155.

Steel's Essay, 61.

Weston's Cat. 161.

Weston's Nurseryman, 1. 171.

Abercr. Arr. 2. 653.

Neither Rand's Chelf. nor Miller's Dic. ed. 7. describe this plant.

Forked fig-marygold.

Native of the Cape of Good Hope.

Flowers September and October.

OBSERVATIONS.

THIS is a pretty plant, which rarely produces its flowers. Linnæus tells us in
Sp.

Sp. Pl. above referr'd to, that he never saw them, and it is one of the very few species for which Mr. Aiton in his Hort. Kew. has left a blank, that the time of flowering may be added by the reader.

I AM therefore happy in being able to give a full and minute description of the flowers and other parts of the fructification of this plant, from several living specimens, which are now in bloom in my own garden.

DESCRIPTION.

ROOTS, fibrous, branched, perennial.

PLANT, decumbent, whilst young almost herbaceous, becoming shrubby by age.

BRANCHES, weak, procumbent, or trailing, short, often pendulous from a shelf, —ancipitous, arising for the most part in pairs from the alæ of the leaves.

LEAVES, acinaciform, obtuse, spinose at the points; spines short, harmless, like herbaceous serratures, —or, leaves perfoliate, expanding, green, large, compressedly triquetrous, channel'd above, with a sharp angled keel, which is spinulose above, —sometimes a few very short harmless spinulæ appear towards the points both on the lateral and keel angles;

angles;—those on the keel slightly recurving and weaker than the lateral ones.

FLOWERS, as large as those of *bellidiflorum striatum*, and much like them, but of a somewhat deeper ground colour, with a higher coloured line of purple up the middle of the petals, and not so pale on the outsides,—opening in a forenoon; handsome.

PEDUNCLES, angular, terminating the trailing branches, long, from one to three, from the same origin; when only one, invested with a pair of bracteal leaves just below the middle like the leaves of the branches, (but rather less, and often three ways ferrulate towards the points,) when three the principal one often naked, the two lateral ones arising from the alæ of what must otherwise have been considered as its bractææ; the lateral peduncles are much less and shorter than the central one, supporting one flower each, and often furnished with a pair of bracteal leaves, resembling the leaves of the branches, but less and more intire, with slightly membranaceous edges.

CALYX, funnel shaped, five, cleft, segments equal; two of them plain, the other

other three with slight membranaceous edges.

PETALS, numerous, broad, linear, at the points from one to three notched, only in one series and equal.

FILAMENTS, numerous, converged, or arched over the styles and germen, and purple.

ANTHERÆ, small, paler.

GERMEN, hæmispheric, slightly five angled, dryish.

STYLES, five, very short, expanding, or, as some might almost think, none, but five stigmata, with roughning feathery purplish points.

CAPSULE, hæmispheric, five angled, five cell'd, cells small, dry.

SEEDS, few, in the green capsule, white, oval-kidney shaped,—in the glass, appearing as if marked with the chequered rudiments of future eminences, or rough places, and attached to a filament similar to that affixed to the seeds of *M. radiatum* above described. Mature seeds I have not seen.

acinaci- MESEMBRYANTHEMUM, foliis acinaci-
forme formibus impunctatis, connatis, an-
(131) gulo carinali scabris, petalis lanceo-
latis.

*Spec. Pl. 695, where Lin. gives the three fol-
lowing synonyms.*

Hort.

Hort. Cliff. 219. No. 18.

Royen Lugdb. 284.

Mesembr. acinaciforme, flore amplissimo purpureo, Dill. Elth. 282, t. 111, f. 270, et. t. 212, f. 271.

The following synonyms also belong to it;—
I have examined them.

Mesembr. acinaciforme, Gouan's Hort. Mons. 244.

Mesemb. falcatum, Syst. Veg. Lich. Soc. 1. 384, named so through error and oversight; for an account of which, see my remarks on *M. falcatum* above.

Mesembr. falcatum, Gmel. Syst. Nat. Tom. 2. 846, named so through some erroneous oversight; for an account of which, see my Observations under the synonyms of *M. falcatum* above.

M. acinaciforme, Ait. Hort. Kew. 2. 189.

Mesembr. acinaciforme, Hill's Hort. Kew. 155.

Mesembr. acinaciforme, Steel's Essay, 61.

Mesembr. acinaciforme, Weston's Cat. 161.

Mesembr. acinaciforme, Weston's Nurseryman, 1. 170.

Mesembr. acinaciforme, Abercr. Arr. 2. 653.

Mesembr. 46, acinaciforme, flore amplissimo, purpureo, Rand's Chels. 133.

Mesembr. 26, foliis acinaciformibus connatis levibus, caule decumbente, Mill. Dic. ed. 7, belongs to this plant; if it does not belong

belong to *M. decumbens* above described; and on thoroughly re-considering the matter, I now incline to think it does belong to *acinaciforme*, and that *Mesembr. 47, foliis subulatis triquetris incurvis, ramis dependentibus, Mill. Dic. ed. 7*, is the same as my *decumbens*. See my Observations on this subject, under the description of *M. decumbens* above.

Ficoides 4, seu ficus aizoides: africana, major procumbens triangulari folio ensiformi, Boerb. Ind. alt. Hort. Lug. Bat. pars 1, p. 289, who only refers to.

H. L. 244—or Herman's Hort. Lug. 244.

Cymetar leav'd fig-marygold.

Native of the Cape of Good Hope.

Cultiv. 1714, Ait. K.

Flowers August and September, Ait. K.

OBSERVATIONS.

I NEVER saw this large *Mesembryanthemum* flower, and I believe it is only occasionally from old healthy plants that the flowers are produced, in this country at least.

DESCRIPTION OF THE PLANT.

THE roots are perennial, fibrous, and branched.

THE branches are very long, at first ascending, but afterwards incapable of supporting

supporting themselves in an erect posture, become deflexed, or decumbent. THE leaves are cymetar shaped, and perhaps the largest of all shrubby Mesembryanthema, except only those of *M. maximum*, the new plant next described, which are deeper than those of *M. acinaciforme*, (whence their lunate form,) but not often longer, or so long.

R E M A R K S.

THE flowers of *acinaciforme* are purple, with lanced petals, and are said to be larger than those of any Mesembryanthemum hitherto discovered.

BUT I am led to conjecture from analogy, that those of *M. maximum*, which have not as yet been seen in this country, will be still larger, and have still broader petals, because the leaves are deeper from the keel to the upper surface, than those of all the other species, for I have constantly observed, and it is worth remarking, that the broad leaved, and rather deep, or belled leaved species, (that is, the' compressed sub-*acinaciform* sorts) of my perennial division of the genus, have (so far as I have seen at least) always proportionally broader petals, (added in the shrubby kinds to ancipitous shoots) than the cylindrical or triquetrous,

trous, not compressed leaved species, (whose shoots are cylindric or angulose) of the same division;—witness the large broad petals of the lingueform kinds, and fine lance petal'd flowers of edule, acinaciforme, and others; which latter being shrubs, have ancipitous shoots.

AND it is equally worthy of remark, that the long slender leav'd kinds of the same division, whether triquetrous or cylindrical, produce flowers with petals of a shape conforming somewhat to the outline of the leaves; hence are observed the long almost capillary petals of *M. elongatum* pugioniforme, and others.

BUT here it must be noticed, that of the long slender leaved kinds, which produce long linear petals; those with cylindrical leaves have petals rather broader, and when broader, rather shorter, (for nature was not so lavish of her boons as to give both length and breadth, where she had bestowed either in a bountiful way,) than the sub-triquetrous species; witness tricolorum and others, whose petals, although long and linear, are not always so very narrow as those of pugioniforme and others.

HENCE, a person conversant with the numerous individuals of this extensive, most oddly varied, and beautiful genus of plants, may almost form an idea of the size and nature of the flowers, of such new or other species, as he has seen and contemplated the leaves of only,—but to proceed—

SEE some other remarks on *M. acinaciforme*, in pages 361, and 362.

*maximum MESEMBRYANTHEMUM, foliis lunatis,
(132) caule arborecente.

Moon-leav'd Mesembryanthemum.

Native of the Cape of Good Hope.

Introduced

Flowers

A new and noble species, the largest hitherto known.

OBSERVATIONS.

I BELIEVE this fine species is a native of that never-failing source of succulent and other beautiful plants, the Cape of Good Hope.

HITHERTO I have seen it in two places only, viz. a few plants in his Majesty's Garden at Kew (raised there I believe from Cape seeds) and one plant which was raised from Cape seeds by ———, Nurseryman at Turnham.

Turnham-green. The seed of it came over amongst a parcel of heath seeds.

FROM the produce of it, I received the specimen before me, which is small, consisting only of a sprig with eight leaves, but which, with my own knowledge of the plant, will suffice for a description of its parts, so far at least, as concerns the branches and foliage; the parts of fructification, I have already noticed under my OBSERVATIONS on *M. acinaciforme*, have not as yet been developed in this country.

DESCRIPTION.

ROOT woody, strong, emitting numerous ramifying fibres.

PLANT strong, firmly upright, pretty regularly branched, woody, more like a little tree, and apparently disposed to grow to a larger size, and make a nobler plant than any *Mesembryanthemum* I have yet seen.

BRANCHES expanding, numerous, disposed somewhat in a pyramidal manner, strong and stout, whilst young ancipitous, glaucous-green, and thickly covered with the fine leaves of the plant; when old, more cylindrical and woody.

LEAVES, lunate, or, very compressedly triquetrous, incurving, with a sharp gibbous keel angle, which forms the side half of an oval, (whence the lunate form) is very intire, and edged with a slight cartilaginous margin, which does not terminate in a point, like the cartilaginous keels of many Mesembryanthema, but ends, in my specimen at least, rounded and blunt—leaves opposite, rather amplexicaul, or embracing the stem, than connate, much the thickest towards the base, especially on the inside; the largest ones measuring when full grown, about two inches long, and almost one deep, from the back or upper side to the most bellying part of the keel, or lower part; and about the third of an inch on the broadest part of the upper surface, which is near the inner base, just by the stem, from whence to the point it (the upper surface or angle of the leaf,) gradually tapers to nothing. — All the leaves are smooth and every way bespotted, with very minute, semipellucid irregularly confluent, or as it were reticulating zigzag, or maplike impunctations, and are covered all over with a very white glaucous bloom, (as it is perhaps improperly called), resembling

sembling that of a fine plum, or that which beautifies the succulent species of *Cacalia*, (as *Cacalia repens*, *ficoides*, *articulata*,) and like those delicate blooms, destructible by the touch, or most easily rubbed off, never to be restored.

It is not so with *M. albidum*, the colour of that fine plant is, if I recollect right, and may be allowed the expression, white in the grain; how different the nature of those whites!—how, or by what secreting or excretory glands is this white colour of *M. maximum* protruded to the surface of its leaves?

Or, may I ask, whether it is an extraneous acquisition extracted from the atmosphere, by the absorbing organs of the plant? It can scarcely be supposed the refuse or rejectamenta of any absorbed fluid, too large for the filtrating orifices of the absorbing vessels to take in;—for was that the case, the oldest leaves would be the most densely covered with it, and the young ones the least; whereas the contrary is observed to take place; the youngest half grown leaves being the whitest, and the old dying ones yellowish.

Is it essential to the welfare of the plant? I think it is, for the healthiest

plants abound most in it ;—but why, if essential to the welfare of the plant, has nature formed it of such destructible materials ?—why, when only touched with a finger or any other body, does that part of it which suffered the unsolicited, and as it were injurious or hateful contact, perish, never to be renewed ?—was it material to the health of the plant, would not nature restore it, or, at least attempt to do so ? cannot she even replace, a branch or a root ;—and why not this apparently less important material ?—But if it is not essential to the well being of the plant, why have all healthy plants more of it than sickly ones ?

INDEED, I believe it is absolutely necessary to the welfare of the plant, and cannot either consider it as an extraneous acquisition, attracted by the absorbing organs of the leaves from the humid atmosphere about them ; or, as an excrementitious material, that retained within them might become obnoxious and hurtful to their health ;—no ; I rather conceive it to be a most minute species of clothing or covering, or in other words, the least conceivable, and as yet unnoticed degree of pubescence, as fine, or finer, and as frail,

frail, and indeed more inconspicuous, than the plumage of a Papilio or butterfly,—who a century since, would have believed the latter a regular congeries of real feathers? and perhaps I may add, who will now believe the former to be an almost inconceivably minute and unenumerated species of what Linnæus terms the pubescence of plants?

THIS idea, however uningenious and romantic it may appear to the generality of my readers, finds some encouraging corroboration in my own opinion at least, when I consider, that the whitish or rather hoary, scarcely to be called glaucous surfaces, (although most evidently of a similar nature,) of my *M. canum*, and the *M. molle* of Aiton's Hort. Kew. are when magnified, found disposed in several places to shoot into a minute degree of pubescence, or hairs, invisible to the naked eye,—from a parity of reasoning, and from a close analogy it is that I conjecture all degrees of a glaucous colour on the surfaces of the leaves and fruits of plants, to be so many minute species of what the great Linnæus denominates the pubescence of plants.

I HAVE said when rubbed, the glaucous colour of *M. maximum* dies never to be restored ; so perishes any more visible degree of pubescence ; so likewise fall the hairs of hirsute plants, when forcibly detached from the surface that gave them birth :—they perish not to be renewed !

It may be urged against me, and I am aware of it, that some force is necessary to detach the hairs of hirsute plants, from their foundations or sources.—and that the glaucous colour of glaucous plants is rubbed off their surfaces with scarce a touch.

THE only sufficient answer I make to this idea if it should be urged against me is, that force is merely comparative,—that a thorn is less easily detached from its post than a hair,—that the invisible feathers of a small moth are much sooner deranged than those of a large butterfly, and that a dwarf falls sooner to the ground than a giant,—but again let me drop such digressions.

ADDITIONAL OBSERVATIONS.

THE flowers and other parts of fructification of *M. maximum*, have not as yet, so far as I know, been produced
in

in this country; see my OBSERVATIONS on this subject, under the article *M. acinaciforme*.

R E M A R K S.

HAVING now, got through my account of what I call my more regulated species, that is, having gradually advanced from few, to many, from little to great things; in a word, having passed from *M. minimum* to maximum, I hasten to that opprobrious part of my OBSERVATIONS, the section, "*Incertæ tribus*," every plant of which, (if I had possessed specimens to examine,) I could, and would, have placed and described, in their natural ranks, in my former and regulated sections, "*ANNUA*,"—" *BIENNIA*,"—" *PERENNIA*," for such was my original intention and desire.

**** I N-

**** *INCERTÆ TRIBUS.*

OR APPENDIX.

† *NEW SPECIES.*

MESEMBRYANTHEMUM.

teretiuf- MESEMBRYANTHEMUM, a stemless
culum plant, with the habit and appearance
(1) of fiffoides, or calamiforme.

OBSERVATIONS.

ROOT, perennial, fibrous.

PLANT, stemless, dwarfish.

LEAVES, like those of fiffoides, but not gibbous, and more cylindrical, or turgid on all sides; impunctate, scarcely glaucous, about two inches long, very robust for their length, with three very obscure ridges or angles from the base to the point, giving them an obscurely triquetrous form, and shewing they would have been of that shape if they had not been so turgidly plump or fleshy.

FLOWERS, I have not seen.

THIS plant may perhaps be the same as Mr. Lee's punctatum.

Turgid

Turgid fig-marygold.

Native of

Introduced

Flowers

puncta-
tum

(2)

THERE is a stemless Mesembryanthe-
mum, called by this name at Mr.
Lee's.

OBSERVATIONS.

I KNOW nothing of it but its name, and
that it is a small plant. It may pos-
sibly be the same as teretiusculum.

Dotted fig-marygold.

Native

Introduced

Flowers

cylindri-
cum

(3)

THERE is a Mesembryanthemum in
nurseries called by the name of cor-
niculatum, but from the little I have
seen of it, I apprehend it will prove a
very different plant.

OBSERVATIONS.

THE leaves appear more glaucous,
longer, more regular, and more up-
right, and cylindrical, than those of
either corniculatum, or corniculatum
β Lin. on which last account, I have
wrote cylindricum in the margin.

FLOWERS,

FLOWERS, I have not seen.

Cylindric leaved fig-marygold.

Native

Introduced

Flowers

margina-
tum
(4)

I HAVE seen a little shrubby Mesembryanthemum at Kew, about four inches high, and not much branched, with an habit and appearance between ciliatum and mutabile.

OBSERVATIONS.

It was larger than ciliatum, and less than mutabile, in every respect; the LEAVES, were small, of a shape between cymetar and hatchet-form, and were for the most part glaucous and edged (especially the youngest) with a very white, or somewhat mealy margin, or border, which last circumstance induced me to adopt the term marginatum for its trivial name.

FLOWERS, I have not seen.

White edged fig-marygold.

Native

Introduced

Flowers

nitidum
(5)

IN A YORKSHIRE NURSERY, I have seen a plant, which I believe was sent thither

ther from London by the name of
Mesembryanthemum nitidum.

OBSERVATIONS.

A YOUNG plant of this I have lately received (amongst other succulent things) from a correspondent in Yorkshire; and I believe it will prove the very same as the plant I have called *spinuliferum*; but it has no appearance of spinescent stipulæ upon it at present, although I have seen less plants, of what I know to be *spinuliferum*, with spinescent stipulæ upon them.

DESCRIPTION.

THE following is a minute description of the above-mentioned *M. nitidum*, now standing on the table before me; it appears as if it had been drawn somewhat weak by the warmth of a stove, or too much moisture.

ROOT, fibrous, but stout, and not so much ramified as the roots of most *Mesembryanthema*.

PLANT, forming a small weak branched succulent shrub.

BRANCHES, on the plant before me, four; the longest of which is near half
a foot

a foot long, with the germs or eyes of future branches arising opposite and axillary from the alæ of its leaves; it is cylindric and expanding, but has a tendency to be decumbent; it is gross and succulent, and covered with the fleshy sheaths of the leaves, which glitter beautifully with innumerable rather oval chrystalline papulæ, some of which appear sunk, others elevated; —the branches appear as if they would shrink a little in thickness on the decaying of the succulent leaf sheaths, which invest them, and acquire a darkish brown colour, and become ligneous; they also appear as if they would become somewhat jointed after the decay of the leaves, or marked with a swelling just by the bases of the leaves; the joints when not drawn long by heat, or too much moisture, appear to be about half an inch apart; when drawn by heat or moisture, above an inch; as is the case with most of them, in the specimen before me.

LEAVES, opposite, connate, or rather perfoliate, sheathing the stems, expanded, but not horizontally; green, gross, many of them an inch long, semicylindric, somewhat subulate, channelled above, especially from the middle

middle downwards to the base, the channel or hollow losing itself upwards near their very blunt cylindrical points, which are marked (as well as every other part of the leaves and their sheaths) with large impunctations, or, roundish-oblong, rather hollowed or sunk, chrystalline papulæ; which papulæ, when adorned by the enlivening beams of the sun, glitter and spangle in a most beautiful manner.

FLOWERS, I have not seen.

ADDITIONAL OBSERVATIONS.

ALTHOUGH most of the leaves are about an inch long, on the above plant, which, I have said, looks as if it had been drawn slender by warmth or moisture, there are three on the lowest part of it (where the joints are not a quarter of an inch long, and consequently not so much drawn by warmth or moisture) which are not half an inch long, perfoliate, (their sheaths very short, reaching to the short joint below them) femicylindric-subovate, very blunt, not channelled above, and covered with spangling chrystalline papulæ.

I HAVE seen but two plants of *M. nitidum*, viz. the plant before and one in Yorkshire;

Yorkshire; except my *M. spinuliferum* should prove the same.

Spangling fig-marygold.

Native of

Introduced

Flowers

stellatum (6) I HAVE seen a *Mesembryanthemum*, I think in the collection of Dr. Swainston at Twickenham; which was called by the trivial name of *stellatum*.

OBSERVATIONS.

It had leaves, triquetrous, compressed, of a moderate size, and a shrubby branched stem, a foot or more high. I obtained no specimen of it, and did not see it in flower.

It may possibly be the same as either *bracteatum*, *radiatum*, or *compressum*, of these OBSERVATIONS; but I am nearly sure it is not the same as the next mentioned *compressum*.

Stellate fig-marygold.

Native of

Introduced by

Flowers

compressum (7) I THINK it was also at Dr. Swainston's, that I saw a *Mesembryanthemum*, under the trivial name of *compressum*.

OBSERVATIONS.

It was a small branching shrub, with compressed triquetrous leaves, apparently different from the stellatum just mentioned; but may be the same as the plant named compressum in these OBSERVATIONS, although I think it is not.

Its flowers I saw not, neither does my knowledge of it reach any further.

Compressed fig-marygold.

Native

Introduced

Flowers

micro- IN YORKSHIRE I have seen a small sickly
phyllum Mesembryanthemum, called by the
Yorkshire. name of microphyllum. I have wrote
(8) to a friend about it; but he has in-
formed me in answer, that the plant is
no more; I believe it went thither
from a London nursery, by the name
of microphyllum.

OBSERVATIONS.

FROM what little I recollect of it, the plant was like either brevifolium, or ciliatum, it was small and in a bad state of health; and at the time I saw it, I had neither seen brevifolium or ciliatum, and I asked no specimen of

D d

it,

it, which causes united, form my present uncertainty about it; it could scarcely be the same as my marginatum, and yet it was not greatly unlike that plant.

In several places I have heard brevifolium called by the name of Mr. Lee's microphyllum, which renders the idea of their being the same plant at least probable.

Its flowers I saw not; and my memory permits no further account of it.

Small leav'd fig-marygold.

Native of

Introduced

Flowers

micro- At Messrs. Grimwood and Co's, Ken-
phyllum fington, I have seen another Mesem-
Kensington. bryanthemum, called microphyllum.

(9)

OBSERVATIONS.

I THINK it appears different from the last mentioned plant, in having much larger leaves; indeed, I am much mistaken if it is not the same plant as my hirtellum, which is sold by Mr. Lee under the name of hispidum humile; for a further account and particular description of which,
see

see my remarks on hirtellum of these
OBSERVATIONS.

R E M A R K S.

As my hirtellum in some states is like brevifolium, and is also like what is called microphyllum at Kensington, it may possibly, notwithstanding what I have just conjectured to the contrary, prove the same plant as the Yorkshire microphyllum.

I REGRET I have no specimen of this plant to describe.

Cylindric small leaved fig-marygold.

Native of

Introduced

Flowers

aggrega-
tum
(10)

AT Mr. Lee's there is a Mesembryanthemum called by the name of aggregatum, which I remember very little more about than the name.

O B S E R V A T I O N S.

It is a small plant, and can scarcely be the same as my nuciforme.

I HAVE not seen the flowers, and never had any specimen of it.

Aggregate fig-marygold.

Native of the Cape of Good Hope.

Introduced

Flowers

humifu-
fum
(11)

At Mr. Lee's is likewise a Mesembry-
anthemum, called hispidum humi-
fufum.

OBSERVATIONS.

I HAVE not seen it, but cannot avoid
conjecturing it to be the same plant
as the hispidum humile above-men-
tioned, which is my hirtellum.

Trailing fig-marygold.

Native of

Introduced

Flowers

hetero-
phyllum
(12)

I HAVE seen a fine stemless Mesembry-
anthemum, with various shaped green-
ish impunctate leaves, the lower ones
somewhat like those of my canum, the
upper or inner ones somewhat like
those of difforme, but not quite so
large. It is a new and most distinct
species.

I HAVE no specimen of it, and never saw
its flowers.

Various leaved fig-marygold.

Native of

Introduced

Flowers

(No. 13.) At Mr. Colvill's Nursery, in the King's
Road, I once slightly took notice of
a beautiful Mesembryanthemum, so
like pugioniforme, that I at first al-
most

most thought it the same; but was assured by Mr. Colvill that it was a very different plant, and that he had raised it from Botany Bay seeds; he added, that the flowers were uncommonly fine and showy.

CAN this plant be the same as my *equilaterum*, which I have said is from Botany Bay, and resembles *pugioniforme*?—Or, can we suppose it the same as my *spectabile*, which has a very specious flower, but whose country I know not?

As Mr. Colvill has sold all his stock of this plant, and as I never had any specimen of it, and never saw its flowers, it is quite impossible to say any more about it; it may perhaps be the same as my *elongatum*.

New dagger-leaved fig-marygold.

Native of New South Wales.

Introduced by Mr. Colvill, Nurseryman, in the King's Road, 1792.

Flowers

(No. 14.) AT Kew I have seen an upright *Mesembryanthemum*, three feet or more high, with leaves like those of *veruculatum*, but more distant, and only half the thickness, with something of the habit of *noctiflorum*.

OBSERVATIONS.

I HAVE no specimen of it—never saw its flowers, and am almost tempted to conjecture it the same as my stramineum.

Arcuate fig-marygold.

Native

Introduced

Flowers

(No. 15.) I HAVE also seen a *Mesembryanthemum* at Kew, very much like my gibbosum, but apparently of a much greener colour.

Its flowers I have not seen.

It is probably the very same as gibbosum; I have no specimens to compare.

Green gibbous fig-marygold.

Native of

Introduced

Flowers

IN ADDITION to the above uncertain *Mesembryanthema*, I have seen two or three raised from Cape seeds, and have raised some myself from Cape seeds, which are not yet far enough advanced to distinguish with sufficient propriety what they are.

(No. 16.)

(No. 16.) PARTICULARLY I have seen two sorts,
one with broad leaves somewhat like
those of the ice plant, *M. chrystal-*
linum, but different.

(No. 17.) AND one with longish subcylindric leaves
like those of *M. hispidum*, but appa-
rently different.

D d 4

†† D E.

†† DESCRIBED by AUTHORS.

THE following Mesembryanthema I have never seen, but have taken them up, from the authors they are referred to.

I BELIEVE every one of them distinct from all the former, and from each other.

cunei- MESEMBRYANTHEMUM foliis lanceolato
folium cuneiformibus oppositis integerrimis,
(1) planis sessilibus, cum caule ramofo
purpureo-papulosis.

*Syst. Nat. Gmel. tom. 2. 846. who refers to,
and appears to have taken up the plant
from,*

Jacq. coll. 2. p. 319, and

Rar. Icon. cent. 2. t. 41.

Wedge leav'd fig-marygold.

Native of

Flowers

OBSERVATIONS.

I DO not know that this plant has ever been cultivated in this country, nor did I ever see a specimen of it.

It is in all probability an annual plant ; and should seem pretty nearly allied to the plant I shall call M. Volkameri, and may possibly be the very same, but from what I can judge they appear distinct.

crini-

crini- MESEMBRYANTHEMUM, foliis ovatis,
florum scapis unifloris.

(2) *Linn. Supp. Pl. 259.*

Syst. Nat. Gmel. tom. 2. 844.

Hair-flowered fig-marygold.

Native of the Cape of Good Hope. Sup.

Pl.

Flowers

OBSERVATIONS.

I do not know that this plant has ever been cultivated in this country,—nor have I seen a specimen of it.

It should seem an annual rooted species.

A COMPLETE description of its parts is given by the younger Linnæus, in the Supplementum Plantarum above quoted, to which I beg the reader to refer.—It is one of the very few species of this genus which is said to have petiolate leaves.

cappillare MESEMBRYANTHEMUM, foliis connatis,
(3) teretibus, papulosis, caule erecto, ramulis unifloris, filiformibus glabris.

Lin. Suppl. Pl. 260.

Syst. Nat. Gmel. tom. 2. p. 848.

Slender branched fig-marygold.

Native of the Cape of Good Hope. Sup.

Pl.

Flowers

OBSERVATIONS.

I BELIEVE this plant has not as yet been introduced into this country, nor have I seen a specimen of it, unless perchance, it should prove the same as my tenellum, above minutely described.

I THINK it is not the same as tenellum, because, it is described as having roundish papulose leaves,—whereas the leaves of tenellum are nearly triquetrous-fubulate, and scabrous-punctate, not papulose,—with the keel angle often scabrous-ferrulate,

Volcka- MESEMBRYANTHEMUM, “Ficoides afri-
meri cana procumbens, latifolia annua flo-
(4) ribus argenteis minoribus.”—

Volckam. Flo. Noriberg. sine Cat. 166. plate, cum fig.

Volkamer's fig-marygold.

Native of the Cape of Good Hope.

OBSERVATIONS.

I TAKE up this plant from Volckamer's Flora Noribergensis, a book I have only just met with, or I should have referred the other Mesembryanthema described in it to the species they belong, in these OBSERVATIONS.

THE

THE figure is a large, and apparently an accurate one; from it, not from Volckamer's account, which I would have the reader himself to examine, I take the following

DESCRIPTION.

PLANT, much branched, diffuse.

BRANCHES, very numerous, succulent, trailing or decumbent, arising opposite, and axillary from the alæ of the leaves—roundish and covered with ascending, or close-pressed pilefcent papulæ.

LEAVES, crowded, opposite, expanded, or reflexing, ovate-lanced or oblong-lanceolate, blunt, pointed, flattish,—slightly carinate, and attenuating downwards into a kind of petiole; every where covered with long rough—probably spangling—pilefcent papulæ, and often bent back at the points.

FLOWERS, when expanded larger than a shilling, pretty,—disposed somewhat dichtomously, as in *M. viridiflorum*, which in the outline they much resemble.

PEDUNCLES, in the figure, five, the central one largest, three quarters of an inch long, cylindrical, covered with a few roughning papulæ,—the lateral ones

ones on each side the former, much shorter, smoother, and mounting higher, two in number; and either in a nodding, or nearly upright posture, the flowers they support being only in bud.

BRACTEÆ, several, foliaceous, or resembling the leaves of the branches, but less and alternate, sitting opposite the peduncles, and scarcely more than barren leaves, as appears by some of them, arising opposite, and, protruding the rudiments of shoots, (possibly the harbingers of lesser flowers) from their axillæ.

CALYX, large, succulent, papulose-pilefcent, roundish-oval, deeply five cleft.

SEGMENTS, unequal, papulose and blunt, three longer than the rest, somewhat foliaceous; the fourth shorter than the former three, and the fifth rather less than the fourth.

PETALS, very numerous, and linear.

FILAMENTS, very numerous, expanded, unequal, and slender.

ANTHERÆ, ovalish.

STYLES, five or six, long, slender, expanding, revolute, and nearly equidistant at the points.

GERM,

GERM,	}	Not represented in the figure, which in all other respects appears a complete one.
CAPSULE,		
SEED,		
And root.		

Hermanni MESEMBRYANTHEMUM, ("FICOIDES,
(5) africana, annua centauroides.")

Herman Parad. Bat. 169.

Herman's fig-marygold.

Native

Flowers

OBSERVATIONS.

I NEVER saw this plant, or any specimen of it, but beg the reader to refer to Herman's account of it.

mucosum MESEMBRYANTHEMUM, ("FICOIDES,
(6) annua minima muscosa.")

Herman's Parad. Bat. 170.

Moss-like fig-marygold.

Native

Flowers

OBSERVATIONS.

THIS appears to have been the least fig-marygold Herman had ever seen, I have never seen a specimen of it.—The reader will find a further description of this small plant in Herman's *Par. Bat.* above quoted.

IN addition to all the abovementioned
MESEMBRYANTHEMA, there are still
several more described in the works
of Boerhaave and others, which it will
hereafter be my business to examine,
and make known.

AND a few in his Majesty's Botanic
Garden at Kew, and in some other
collections which have not been de-
scribed at all; either in these **OBSER-**
VATIONS or elsewhere.

P O S T.

POSTSCRIPT.

HAVING at length performed the task I had chalked out for myself, and having enumerated all the species of MESEMBRYANTHEMUM I can boast an *acquaintance* with, except a few, which I have said are still to be found in some of the collections about London, and in the works of Boerhaave and others, and which when I get the books, I shall make it my chief business to examine and develop; having performed this task I say, in the best manner my abilities and opportunities allow me to do it, I cannot take my leave of the *Botanical* reader, if even he has patiently condescended to cast his eye on me so far, without troubling him with a few supplementary requests.

FIRST, I humbly request his kind and judicious indulgence will weigh and consider the general difficulties and nature of the subject I have had to handle, as well as those which I have stated

stated to be peculiar to the inconveniences I laboured under (which inconveniences I have candidly, and perhaps too particularly pointed out) —I request he will do these things, and then *speak of me as I deserve.*

SECONDLY, if in examining any of my descriptions, he does not find them to answer so accurately as he could wish, I do also humbly request it may be remembered that no tribe of succulent plants puts on such a variety of different appearances, from the effects of management, as the GENUS MESEMBRYANTHEMUM; —that no one genus *by nature* is more diversified in structure and habit, more extensive, or whose individuals or species more nearly approach each other; or are with more difficulty distinguished from their congeners.

How much (whilst young) they vary when raised by seed or cuttings, from the parent plants which produced them! admitting equal treatment to have been administered.

How they are altered by the warmth of a stove, or the cold exposure to midnight dews!

AND how much and how differently affected when their leaves and joints are
not

not only elongated, but altered even in their outlines, by too much moisture, or shortened and stunted by excess of drought.

THESE things are known to most, who cultivate plants.

M. BREVIFOLIUM, when young, or when supplied with too much warmth or moisture, has long leaves, slightly channelled above; when not drawn by any of those causes, its leaves are truly cylindric, and excessively short.

M. HISPIDUM, when in a pot, and not drawn up weak by warmth or moisture, has firm divaricating shoots, which do not exhibit the most distant propensity to throw out radicles at the joints; but hispidum, when planted in the full ground, and encouraged by moisture, becomes quite decumbent, and acquires many reptant stems.

M. CHRYSTALLINUM, when pinched for water, is small, healthy, and not prostrate, but abundantly prolific; but when planted at large, in the borders of the garden, it becomes extremely large, prostrate and gross, luxuriant and barren.

AFTER these, other instances are useless. EXCEPT by way of illustrating, or rather let me say corroborating, the above

E e , mentioned

mentioned Proteus-like mutability, that is so frequently observed to affect the leaves, joints and shoots of *Mesembryanthema*, I add the following little passage from the "*Dictionary Botanicum*" of that experienced judge of such matters, Professor Bradley ;— a work I have had the pleasure to meet with since I wrote the foregoing parts of my OBSERVATIONS.

BRADLEY, in speaking of *Mesembryanthema*, in his "*Dictionary Botanicum*," under the article "*Ficoi-des*," says,—“ The very succulent
“ sorts require very little water in
“ winter, but all the sorts require in
“ general a great deal of air ; or they
“ will be apt to have their leaves and
“ shoots grow longer than they should,
“ and we shall not know how to dis-
“ tinguish them ; for they are very
“ apt to grow out of our knowledge,
“ if they are close confined from
“ air.”

BRADLEY, under the same article, further acquaints us, that all fig-mary-golds, “ except the annual sorts, we
“ may raise from cuttings ; and even
“ the annuals may be raised that way,
“ but their dying in the winter makes
“ it not worth our while ; they are
“ also

“ also to be raised from seeds sown in
 “ March upon common hot-beds;
 “ but the cuttings of all of them
 “ grow much the best if they are
 “ planted in the natural ground.”

I HAVE inserted the last passage of the
 “ *Dictionary Botanicum*” for two
 reasons :—

FIRST, because the work is rather a
 scarce one, and not much known to
 Botanists. It is not, if I recollect
 right, enumerated in the extensive
 Catalogue of Botanical Books, given
 in the fourth volume of Weston’s
 Nurseryman, or “ *Botanicus Uni-*
versalis;” and—

SECONDLY, because Bradley says the
 annual species of *Mesembryanthemum*
 may be struck from cuttings, an asser-
 tion that makes much against myself,
 for I have declared, in the First Part
 of these OBSERVATIONS, (now printed
 off) that the two annual species which
 I have seen, viz. *M. pinnatifidum*,
 (jagged - leaved ice-plant,) and *M.*
chrysellinum, (common ice-plant) are
 not to be struck from cuttings, by
 any art that I am acquainted with.

BEFORE I take my leave of the above
 passage, I cannot avoid observing, that
 Bradley appears rather to contradict

himself in it, as will appear by a careful review of its component words, for he says in the outset of the passage,—“ That all fig-marygolds, except the annual sorts, we may raise from cuttings ;” and proceeding in the passage, adds that—“ even the annuals may be raised that way, but their dying in the winter makes it not worth our while.”

I SUPPOSE we must understand by the whole of the passage, that all the annual species of *Mesembryanthemum*, or at least some of them, are capable of being increased by cuttings, with proper attention and care ; but that they strike roots with much greater difficulty than the perennial and shrubby species, and are not worth the trouble of raising from cuttings, while we can have a plentiful increase of them by seeds in a much easier manner.

BRADLEY, in another place, under the above-mentioned article “ *Ficoides*,” says that he—“ once had completely sixty sorts, very different from one another ; these I divided into classes, viz. the tongue-leaved dwarf kinds,—the aloe formed dwarfs,—the frutescent upright kinds,—the
“ creeping

“ creeping kinds,—the night flow-
 “ ering kinds,—and the annual kinds,
 “ —and the tree kinds,—many of
 “ which I have also figured in my
 “ decades of succulent plants.”

BRADLEY also tells us, that he named
 the genus, “ Fig-marygold.”

I FIND the above-mentioned “ Diction-
 -arium Botanicum,” which appears to
 have been published in the year 1728,
 in two octavo volumes, was the first
 attempt ever made in this, and perhaps
 any other country, to reduce, or rather
 separate and sift, to alphabetical order
 and precision, the bulky materials of
 botany and horticulture;—with what
 success it was afterwards resumed and
 expanded, (not to say wrought to per-
 fection) by the unwearied assiduity of
 the industrious and much to be re-
 gretted MILLER,—few, I trust, who
 delight in gardening, have yet to
 learn!—But to return,

I HAVE said it before, and I say it again,
 that all my descriptions were made
 from real specimens, as they laid before
 me,—except in the few instances where
 the contrary is particularly pointed
 out.

I HAVE enumerated (and described as
 far as my specimens enabled me) one

hundred and thirty-two distinct species of Mesembryanthemum, exclusive of a great many others placed under my section "*Incertæ tribus*," and all varieties, a number nearly double that in the last edition of Species Plantarum, and greater far, than I, but one year since, supposed the fertile and productive bosom of created nature to contain.

ABOUT fifty of the above-mentioned species I believe to be entirely new, and undescribed.

THROUGHOUT my account of the whole, I have endeavoured to make my descriptions rather plain and intelligible, than either concise or elegant. In a word, it has been my aim, by contrasting the varying points of the different species as much as possible, to furnish an opportunity for the unlettered gardener to make himself as well acquainted with the singular and beautiful plants I have described, as the more learned and experienced botanist, whose propitious stars have conducted him delighted, to contemplate and enjoy the brightest depths of our interesting and instructive science, and to whom, as I have somewhere seen well remarked, all methods and descriptions

descriptions should be alike, should be intelligible and easy.

I SHALL be censured by many, and I am aware of it, and I think have noticed it before, for dividing the new Mesembryanthema into so many distinct species, as I have been induced (from a thorough examination and comparison of the plants) to do;—I believe them distinct from each other, (except where I have placed doubts to the contrary,) and have therefore arranged and described them accordingly.

I SHALL also be censured, and I am also aware of it, for referring to the works of Hill; and to the catalogues of Weston, Abercrombie, and Steele.

THEY may be thought of little consequence in an essay like the present; and of no other use, than that of enlarging its bulk.

TO THIS I must answer,—all the works of Hill which I have referred to, (and I should have referred to more if I had had them,) are useful in pointing out to the reader, the class, order, and divisions under which he thought proper to arrange the species of Mesembryanthemum which were known in his time.

AND THE catalogues of Weston, Abercrombie, and Steele, not only afford similar instruction, but inform the unlettered reader that the plants they describe were in the English gardens at the time they wrote, and (being translations,) make him acquainted with both the English descriptions and English names of the plants they enumerate.

I WISH it to be known, that I have already found my descriptions of *M. nuciforme*, and *M. moniliforme*, to be wrong or faulty, particularly that of the latter, which indeed does not seem to belong to the section I have placed it under—neither do I, (for want of a good specimen) know, to what section to refer it.

M. NUCIFORME, I have lately seen with two pair of exceeding short leaves, crossing each other, and resembling those of *testiculare*: but the plant was in a warm stove, and possibly much drawn: for when in the open air and in the summer season, the young offsets or shoots are shaped like nuts, and have no real leaves but merely shallow clefts at top, which clefts are unequal and little more than sufficient

sufficient to distinguish the shoots from solid bodies.

OF *M. MONILIFORME* I have to observe; I have seen a plant of it, which protrudes from between the very short connate leaves I have described it to possess in the beginning of these OBSERVATIONS; a pair of semi-cylindric, subulate green leaves, above two inches long.

A FURTHER DESCRIPTION OF *MESEMBRYANTHEMUM VILLOSUM*.

A LIVING SPECIMEN of *M. villosum* with flowers upon it almost open, is before me; from which I with pleasure extract the following description, —the more so, when I call to memory the defective brevity which attends the one I have already given.

GENERAL PEDUNCLE an inch and an half long, cylindric, villose, slightly thickening near the calyx.

FLOWERS, terminating the branch in a little head, three in number, one central larger, two lateral smaller.

BRACTEÆ, two, affixed to the base of the calyx of the central flower, pilose, sub-channel'd, patent, foliaceous plane, subulate, near an inch long, near the base ciliate, not so fleshy as the leaves
of

of the branches but broader, protruding from their alæ, the lateral flowers which are joined to them on the outside towards the base.

CALYX, central one, larger than the lateral ones, six leav'd, leaves unequal, all pilose planish, broad at the base and rather tapering to a point, two outer larger, thicker, and more densely covered with hairs than the four inner leaves, which are less and slightly membranaceous,—in the expanded flower, all the calycine leaves, (which answer to the nature of petals in this plant,)—acquire a pale purple tinge within, but remain green without,—the two lateral calices are less than the central one, but like it in all other respects, and furnished with similar bracteal leaves, one of which protrudes from its ala the rudiment of an abortive flower, at the base of which sit the rudiments of bracteal leaves similar to the above.

PETALS, none.

FILAMENTS, numerous, short, pale, or yellowish-white.

ANTHERÆ, large, oblong-square, furrowed on both sides and deeply nick'd at both ends; yellowish.

POLLEN,

POLLEN, yellowish.

GERM, hexagonal, nearly hemispherical.

STYLES, six, long, paleish yellow, expanding or recurving, stout for the size of the flower.

CAPSULE, six angled, six cell'd, dryish.

SEEDS, I have not seen.

FURTHER OBSERVATIONS ON MESEMBRYANTHE-
MUM SPINULIFERUM AND VIRIDIFLORUM.

THE spinulæ noticed under my account of *M. spinuliferum* are not true stipulæ, —on seeing them on a healthy plant, I found them no other than the permanent nerves, or ligneous strings of the leaves, hardened and elongated by age and exposure to the action of the air, after the exsiccation and decay of the pulpy part of the leaves which had enveloped them.

SIMILAR spinulæ are to be found in all aged plants of *M. viridiflorum*.

THEY are the only plants of the genus I have observed to possess this peculiarity.

FURTHER OBSERVATIONS ON *M. TRIPOLIUM*.

I HAVE lately seen several seedling plants raised from Botany Bay seeds, which promise to be the same as *M. Tripodium*, —they have not yet produced any flowers.

FURTHER

FURTHER OBSERVATIONS ON *M. CANALICULATUM*,
M. EDULE AND *M. ACINACIFORME*.

FINE large and healthy plants of these three species now lying before me have acquired the faculty of emitting fibres from almost all the joints on their young shoots, the unusualness of which must apologize for the following account of those plants;—they have been for the last three or four months, (and it is now January,) in a good but dampish greenhouse, which has had occasional fires, and has sloping lights from the very top, but no upright sashes in the front.

THEY have grown on a shelf, in small fixty sized pots, in poor sandy earth, and have been liberally watered;—their shoots hung pendulous from the shelf, and are from one to two and a half feet in length.—The plants were raised from cuttings last summer, and have never been shifted into any other pots.

THE fibres seem to arise from the pithy or central parts of the branches, just beneath the joints, but towards the undersides of them, or those sides which were nearest the wall, and most shaded from the light,—a circumstance common to all creeping plants, indeed

indeed it is as natural for roots of all kinds to avoid and shun the light, as it is for their branches to court and search for it—I once set on foot a few experiments with a view of ascertaining the degree of those natural, and naturally opposite propensities—the subjects of them were planned in drinking glasses of a very small size, that the motions, actions, or methods of progressive growth of the fibres, might be more advantageously observed and contemplated—the result of these experiments evinced to advantage the anxious propensity of nature to conceal the radicles of her vegetable subjects as much as possible from the light of day.

—The subjects of the experiments were cuttings of succulent plants,—they were placed in a sunny window of a dwelling house, and watered occasionally,—in a short time they struck root, and the points and sides of several radicles were observed on the dark or northern sides of the glasses, but none at all on the light or southern sides of them,—after the plants began to fill the glasses with their roots, but not before, the sides only of a few radicles began to be visible on their light or southern sides, forced thither
in

in all probability for want of room; about which time I neglected the object I had in view when I instituted the experiments, and began to try what effect electricity differently administered, from a small machine, would have upon their vegetative powers; and (being in *glasses filled with moist earth*,) I sometimes amused myself and my friends, by giving small shocks from them, as from a small charged Leyden phial,—but to drop this digression, and return to the

FIBRES, or radicles on the under sides of the shoots of the above mentioned sub-reptant *Mesembryanthema* before me, viz. *M. canaliculatum*, *M. edule*, and *M. acinaciforme*, and more especially those of the latter,—its fibres appear to have arisen from the pith or heart of the plant, and to have burst or protruded themselves through its outer bark, or rather the sheaths of its connate leaves, in several irregular directions, they are very short, stout, and white, and one, two, or three in number at a joint,—some of them have burst through the bark just below the joint,—others upon it,---and a few seem to have extended themselves in a very strange manner between

tween

tween the wood or central part, and the sheaths of the leaves a little way upwards, to make their appearance, in the bosoms of the leaves, in a real axillary posture,---they communicate to the plant a most singular and unusual appearance.

THE fibres of the other two species, viz. *canaliculatum*, and *edule*, are all very regular, and arise as in the true rampant species, from the under basis of the joints,---they are from one to three or more in number at each joint, of a white colour, and healthy; and would, if placed in contact with moist ground, become strong roots in a very short time.

A SYSTEM.

A SYSTEMATICAL INDEX *of the
Specific Names and Characters of the Plants described
in the foregoing Observations.*

*** A N N U A.**

pinnati- MESEMBRYANTHEMUM foliis pinnatifi-
fidum (1) dis.

chrystal- MESEMBRYANTHEMUM foliis ovatis al-
linum ternis papulosis floribus sessilibus, caly-
(2) cibus late ovatis, acutis retusis.

limpidum MESEMBRYANTHEMUM foliis oppositis
(3) spathulatis, obtusis scabridis, papulis
oblongis, foliolis calycinis oblongis
obtusis, medio coarctatis.

sessiliflo- MESEMBRYANTHEMUM foliis planis spa-
rum thulatis, caulibusque papulosis, ramis
(4) divaricatis, floribus sessilibus.

glabrum MESEMBRYANTHEMUM foliis amplexi-
(5) caulibus distinctis, spathulatis glaber-
rimis, pedunculis longitudine folio-
rum, calycibus hemisphæricis.

Hélian- MESEMBRYANTHEMUM foliis spathula-
thoides tis planis lævibus, pedunculis longissi-
(6) mis, calycibus basi planis angulatis.

pome-

pomeridia- MESEMBRYANTHEMUM foliis planius-
 num culis lato-lanceolatis levibus subciliatis
 (7) distinctis, caule pedunculis germini-
 busque hirtis.

nodiflo- MESEMBRYANTHEMUM foliis alternis te-
 rum (8) retiusculis obtusis, basi ciliatis,

apetalum MESEMBRYANTHEMUM foliis lineari-sub-
 (9) lanceolatis, subtus muricatis, caulibus
 prostratis.

copticum MESEMBRYANTHEMUM foliis semitereti-
 (10) bus papulosis distinctis, floribus sessi-
 bus axillaribus, calycibus quinque-
 fidis.

* * B I E N N I A .

papulosum MESEMBRYANTHEMUM foliis oppositis
 (11) distinctis, ovato-spathulatis, papulis
 subglobosis, calycibus angulatis quin-
 quefidis, ramis angulatis.

Tripolium MESEMBRYANTHEMUM foliis alternis
 (12) lanceolatis planis impunctatis, caulibus
 laxis simplicibus, calycibus penta-
 gonis.

caducum MESEMBRYANTHEMUM foliis filiformi-
 (13) semiteretibus distinctis papulosis ovatis,
 F f floribus

floribus lateralibus sessilibus terminalibus, basi foliorum cinctis.

*** *P E R E N N I A*.

† *S U B A P H Y L L A*.

*minimum *MESEMBRYANTHEMUM*, planta carnosa
(14) obconica truncata minima maculata,
maculis confluentibus.

*nuciforme *MESEMBRYANTHEMUM*, planta carnosa
(15) glauca subphæroidea, foliis subnullis.

*monili- *MESEMBRYANTHEMUM*, caudex submo-
forme niliformis, foliis vix ullis aut brevissi-
(16) mis connatis.

†† *S U B A C A U L I A F O L I O S A*.

testiculare *MESEMBRYANTHEMUM* foliis quatuor
(17) decussatis supra planis.

*fissum *MESEMBRYANTHEMUM* foliis connatis,
(18) lineari-oblongis equalibus brevis ob-
tusis semiteretibus glaucis.

*fissoides *MESEMBRYANTHEMUM* foliis connatis
(19) lineari-oblongis inæqualibus obtusis
semiteretibus subgibbosis.

*perviride

*perviride MESEMBRYANTHEMUM foliis obtusis
(20) inæqualibus punctatis semiteretibus,
extus convexis, intus plano-concavis.

*gibbosum MESEMBRYANTHEMUM foliis inæquali-
(21) bus brevis craffissimis, extus gibbosis.

*pubescens MESEMBRYANTHEMUM foliis incanis
(22) connatis inequalibus subpubescenti-
bus subgibbosis, apice subtus sub-
carinatis.

digitatum MESEMBRYANTHEMUM subacaule, foliis
(23) alternis teretibus obtusis, floribus ax-
illaribus sessilibus.

calami- MESEMBRYANTHEMUM foliis subteretibus
forme adscendentibus impunctatis connatis,
(24) floribus octogynis.

*subula- MESEMBRYANTHEMUM acaule foliis fu-
toides (25) bulatis apice triquetris integerrimis.

subulatum MESEMBRYANTHEMUM, acaule foliis fu-
(26) bulatis triquetris dorso superne serratis.

bellidi- MESEMBRYANTHEMUM acaule, foliis tri-
florum quetris linearibus impunctatis, apice
(27) trifariam dentatis.

•denticu- MESEMBRYANTHEMUM foliis connatis
 latum incanefcentibus compresso-triquetris
 (28) subincurvatis, basi attenuatis, apice
 subtus denticulatis.

rostratum MESEMBRYANTHEMUM acaule, foliis se-
 (29) micylindricis connatis, externe tuber-
 culatis.

*rostra- MESEMBRYANTHEMUM subacaule, foliis
 toides / glaucis subulatis subtriquetris, basi
 (30) extus convexis, intus pustulatis.

compactum MESEMBRYANTHEMUM acaule, foliis
 (31) connatis punctatis semiteretibus, apice
 triquetris subreflexis acutis, floribus
 sessilibus, calyce subcylindraceo sex-
 fido.

albidum MESEMBRYANTHEMUM acaule, foliis tri-
 (32) quetris integerrimis.

*canum MESEMBRYANTHEMUM foliis incanef-
 (33) centibus subacinaciformibus trique-
 tro-compressis, inferne attenuatis, su-
 perne extus gibbosis.

caninum MESEMBRYANTHEMUM subacaule, foliis
 (34) opacis dentatis apice triquetris, flori-
 bus pedunculatis, pedunculis longissimis
 basi bracteatis.

felinum

felinum MESEMBRYANTHEMUM acaule, foliis sub-
(35) tusfemicylindricis ciliatis, ciliis longis.

***tigrinum** MESEMBRYANTHEMUM acaule foliis ma-
(36) culatis ciliatisque, ciliis longissimis.

***murinum** MESEMBRYANTHEMUM subacaule, foliis
(37) punctatis, basi semicylindricis attenua-
tis, apice triquetris trifariam denticu-
latis, floribus subsessilibus.

dolabri- MESEMBRYANTHEMUM foliis dolabri-
forme (38) formibus punctatis, caule erecto.

***dolabri-** MESEMBRYANTHEMUM subacaule, foliis
formoides subdolabrifformibus punctatis, caule
(39) deflexo.

difforme MESEMBRYANTHEMUM foliis difformibus
(40) punctatis connatis.

cruciatum MESEMBRYANTHEMUM acaule, foliis se-
(41) micylindraccis subulatis subdifformi-
bus tenerrimis crassis patentibus,
cruciatim positis.

***angustum** MESEMBRYANTHEMUM acaule, foliis
(42) lineari-lingueformibus longis semicy-
lindraccis.

longum (43) MESEMBRYANTHEMUM foliis lingue-
formibus longissimis sub-æqualibus,
pedunculis elongatis.

*præpingue (44) MESEMBRYANTHEMUM foliis lingue-
formibus latiusculis permollibus, juni-
oribus ciliato-pubescentibus, angustio-
ribus apice recurvis.

lingue-
forme (45) MESEMBRYANTHEMUM foliis lingue-
formibus latis obtusis, junioribus an-
gustioribus brevioribusque; floribus
brevissime pedunculatis; calycibus laci-
niis subtuberculatis carinatis, carinis
ciliato-pubescentibus.

latum (46) MESEMBRYANTHEMUM foliis lingue-
formibus breviusculis latis æqualibus;
floribus subsessilibus.

scalpratum (47) MESEMBRYANTHEMUM foliis scalprati-
formibus latissimis altero margine cras-
sioribus, basi interiore cartilagineo-
gibbosis; calycibus glaberrimis: flo-
ribus maximis sessilibus; petalis apice
crenulatis.

††† CAULESCENTIA FOLIIS PLANIS.

humifu- MESEMBRYANTHEMUM foliis amplexicau-
 fum libus spathulatis carinatis papulosis
 (48) conicis scabris, petalis minutissimis.

cordifo- MESEMBRYANTHEMUM foliis cordatis
 lium (49) obtusis, caulibus prostratis.

expansum MESEMBRYANTHEMUM foliis planiuscu-
 (50) lis lanceolatis impunctatis patentibus
 distinctis oppositis alternisque remotis.

tortuosum MESEMBRYANTHEMUM, foliis planiusculis
 (51) oblongo-ovatis subpapillofis confertis
 connatis, calycibus triphyllis bicorni-
 bus.

pallens MESEMBRYANTHEMUM foliis oppositis
 (52) amplexicaulibus distinctis oblongo-
 lanceolatis acutis obtuse-carinatis, pa-
 pulis minutis.

†††† SUFFRUTESCENTIA FOLIIS SUBTUS
 ROTUNDATIS.

viridiflo- MESEMBRYANTHEMUM foliis semicylin-
 .rum draceis papuloso-pilosis calycibus quin-
 (53) quefidis hirsutis.

*spinuliferum MESEMBRYANTHEMUM foliis semiteretibus papuloso-chrySTALLINIS, stipulis spinulescentibus.
(54)

*carneum MESEMBRYANTHEMUM foliis lineari-subteretibus, floribus dichotomis.
(55)

splendens MESEMBRYANTHEMUM foliis semiteretibus impunctatis recurvis distinctis congestis, calycibus terminalibus digitiformibus.
(56)

*fastigiatum MESEMBRYANTHEMUM foliis subcylindricis patentibus apice subrecurvis, calycibus laciniis subæqualibus.
(57)

*reflexum MESEMBRYANTHEMUM foliis oppositis distinctis semicylindricis supra subcanaliculatis arcuato-reflexis, ramis subvirgatis papillofis, papillis minutis.
(58)

geniculiflorum MESEMBRYANTHEMUM foliis semiteretibus papulosis, floribus sessilibus axillaribus, calycibus quadrifidis.
(59)

*canaliculatum MESEMBRYANTHEMUM foliis canaliculatis, lineari-semiteretibus papulosis splendentibus, apice subrecurvis, floribus dichotomis, capsulis pellucidis,
(60)

villosum

- villosum (61) MESEMBRYANTHEMUM foliis pubescentibus connatis impunctatis caule piloso.
- corniculatum (62) MESEMBRYANTHEMUM foliis imbricatis longis æqualibus mollibusque punctatis, basi semicylindricis, apice semicylindrico-triquetris.
- diversiphyllum (63) MESEMBRYANTHEMUM foliis ramorum remotis connatis inæqualibus scabridopunctatis, semicylindrico-triquetris; caule prostrato elongato; petalis subtus purpureis.
- loreum (64) MESEMBRYANTHEMUM foliis semicylindricis recurvis congestis, basi interiore gibbis connatis, caule pendulo.
- *tricolorum (65) MESEMBRYANTHEMUM foliis longissimis connatis cylindricis, caule procumbente angulato, floribus polygynis.
- *elongatum (66) MESEMBRYANTHEMUM foliis longissimis glaucis subteretibus subulatis, basi interiore canaliculatis, floribus subdecagynis.

*semicy-

*femicylin-**MESEMBRYANTHEMUM** foliis connatis
dricum longis semicylindricis papulosis, apice
(67) attenuatis subobliquis, junioribus sub-
ciliato pubescentibus.

tenuifo- **MESEMBRYANTHEMUM** foliis semitereti-
lium bus subulatis glabris distinctis, inter-
(68) nodio longioribus.

*spini- **MESEMBRYANTHEMUM** foliis oppositis
forme subcongestis cylindraceis subspini-
(69) formibus, apice attenuatis, ramis erectis
lignosis.

bicolorum **MESEMBRYANTHEMUM** foliis subtrique-
(70) tro-subulatis, scabrido-punctatis, pe-
dunculis nudis papuloso-scabridis, co-
rollis luteis.

cocci- **MESEMBRYANTHEMUM** foliis semicy-
neum lindrico-compressis, carinis obtusis,
(71) pedunculis sub-bracteatis basi læviga-
tis, petalis coccineis.

noctiflo- **MESEMBRYANTHEMUM** foliis semicylin-
rum dricis impunctatis distinctis, floribus
(72) pedunculatis, extus phœniceis, caly-
bus quadrifidis.

stramine-

stramine- MESEMBRYANTHEMUM foliis semitere-
um tibus falcatis, caule arborecente,
(73) floribus extus stramineis.

brachia- MESEMBRYANTHEMUM caulibus foliisque
tum cylindricis papulosis, ramis tricho-
(74) tomis.

læve MESEMBRYANTHEMUM foliis cylindraceis
(75) obtusis amplexicaulibus lævibus, caly-
cibus quinquefidis, laciniis oblongis
obtusis.

grossum MESEMBRYANTHEMUM foliis subcylin-
(76) dricis confertis papulosis, caudice basi
incrassatis, ramis diffusis glabris.

stipulacem MESEMBRYANTHEMUM foliis semicylin-
(77) drico-compressis incurvatis punctatis
distinctis congestis, basi marginatis.

*purpuro- MESEMBRYANTHEMUM foliis connatis
croceum semicylindrico - subtriquetris obtusis,
(78) calycibus quinquefidis; laciniis duabus
exterioribus longis foliiformibus, tri-
bus interioribus brevioribus mem-
branaceis.

verucu-

veruculatum (79) MESEMBRYANTHEMUM foliis cylindrico subtriquetris acutis connatis arcuatis impunctatis distinctis.

molle (80) MESEMBRYANTHEMUM foliis triquetris connatis erectis glaucis impunctatis, ramis semiteretibus, pedunculis axillaribus compressis.

*cymbiforme (81) MESEMBRYANTHEMUM foliis brevis compresso-subtriquetris obtusis, subcymbiformibus.

*pulverulentum (82) MESEMBRYANTHEMUM foliis cylindrico-subtriquetris obtusis scabrido-punctatis, punctis pulverulentibus.

*speciosum (83) MESEMBRYANTHEMUM foliis semicylindrico-subtriquetris, supra planiusculis, obtusis, subincurvato-cornutis, junioribus caulibusque papilloso-splendentibus.

micans (84) MESEMBRYANTHEMUM foliis subcylindricis papulosis distinctis; caule scabro.

*maculatum (85) MESEMBRYANTHEMUM foliis patentibus obtusis compresso-semicylindricis, caule maculato erecto.

tube-

tuberosum MESEMBRYANTHEMUM foliis subulatis
(86) papulosis distinctis; apice patulis, radice capitata.

brevifolium MESEMBRYANTHEMUM foliis cylindraceis obtusissimis papulosis patentibus,
(87) ramis diffusis.

hispidum MESEMBRYANTHEMUM foliis distantibus
(88) cylindricis, caule hirtio, calycibus glabris papulosis, staminibus purpurascens.

striatum MESEMBRYANTHEMUM foliis cylindraceis, caule hispido, pedunculis calycibus lanuginosis.

*hirtellum MESEMBRYANTHEMUM foliis confertis
(90) subcylindricis obtusissimis papuloso-incanescens, caulibus, pedunculisque hispidis, calicibus chrysalinis.

echinatum MESEMBRYANTHEMUM foliis oblongis
(91) ovatis subtriangulis gibbis ramentaceo-hispidis, laciniis calycinis foliiformibus.

barbatum MESEMBRYANTHEMUM foliis subovatis
(92) papulosis distinctis, apice barbatis, ramulis prolixis recumbentibus, calycibus pentaphyllis glabris.

hirsutum MESEMBRYANTHEMUM ramulis hirsutis
(93) foliis semicylindrico-turgidis scabrido-
papulosis, apice barbatis, basi ciliatis,
calycibus sex vel septemphyllis inæ-
qualibus.

densum MESEMBRYANTHEMUM subacaule, foliis
(94) densissime imbricatis connatis semicy-
lindræis, supra subconcavis, apice
barbatis; calycibus hexaphyllis sub-
æqualibus hispidis.

††††† SUFFRUTESCENTIA FOLIIS TRI-
QUETRIS.

perfolia- MESEMBRYANTHEMUM articulis caulinis
tum terminatis foliis connatis acuminatis
(95) punctatis glaucis triquetris, subtus
triacanthis.

uncinatum MESEMBRYANTHEMUM articulis caulinis
(96) terminatis foliis connatis acuminatis
brevis punctatis triquetris, subtus dia-
canthis.

*viride MESEMBRYANTHEMUM foliis perfoliatis
(97) triquetro-semicylindricis acutis, inte-
gerrimis, apice uncinato-recurvis.

*tenellum MESEMBRYANTHEMUM foliis connato-
(98) perfoliatis minimis triquetris scabrido-
punctatis,

punctatis, apice subulato-recurvis, angulo carinali scabris.

- *imbrica- MESEMBRYANTHEMUM pedunculis sub-
tum unifloris, bracteis foliiformibus im-
(99) bricatis, foliis perfoliatis glaucis tri-
quetro-femiteretibus.
- *multiflo- MESEMBRYANTHEMUM foliis glaucis per-
rum foliatis triquetris, floribus aggregatis
(100) subseffilibus.
- bractea- MESEMBRYANTHEMUM foliis subacina-
tum ciformibus punctatis, apice recurvis,
(101) bracteis amplexicaulibus.
- *radiatum MESEMBRYANTHEMUM foliis longis sub-
(102) æqualiteri-triquetris basi incrassatis,
apice attenuato-uncinatis, floribus
bracteatis, bracteis triquetris membra-
naceis.
- *compres- MESEMBRYANTHEMUM foliis triquetris
sum apice recurvis, basi submembranaceis ;
(103) pedunculis subterminalibus subnudis.
- glaucum MESEMBRYANTHEMUM foliis triquetris,
(104) acutis punctatis distinctis, calycibus
foliolis ovato-cordatis.
- *glaucoides MESEMBRYANTHEMUM foliis triquetris
distinctis pellucido-punctatis, carinis
(105) obtusis subglabris, pedunculis bracteatis.

aureum

- aureum** (106) **MESEMBRYANTHEMUM** foliis cylindrico-triquetris punctatis distinctis, pistillis atro-purpurascentibus.
- umbellatum** (107) **MESEMBRYANTHEMUM** foliis subulatis scabrido-punctatis connatis, apice patulo, caule erecto, corymbo trichotomo.
- spinosum** (108) **MESEMBRYANTHEMUM** foliis teretibus triquetris punctatis distinctis, spinis ramosis.
- emarginatum** (109) **MESEMBRYANTHEMUM** foliis subulatis, congestis subscabris, calycibus spinosis, petalis emarginatis.
- *emarginatoides** (110) **MESEMBRYANTHEMUM** foliis aggregatis distinctis triquetris scabrido-punctatis albidis acuminatis, caule erecto.
- scabrum** (111) **MESEMBRYANTHEMUM** foliis subulatis distinctis subtus undique muricatis, calycibus muticis.
- deflexum** (112) **MESEMBRYANTHEMUM** foliis triquetris acutis glaucis, punctis obsoletis scabriusculis, laciniis calycinis interioribus membranaceis.
- reptans** (113) **MESEMBRYANTHEMUM** foliis triquetris acutis scabris caule reptante.

australe

- australe** **MESEMBRYANTHEMUM** foliis subtri-
 (114) tris punctulatis connatis obtusiusculis,
 caule tereti repente, pedunculis ob-
 tuse ancipitibus solitariis.
- crassifo-** **MESEMBRYANTHEMUM** foliis semicylin-
 lium dricis impunctatis connatis apice tri-
 (115) quetris, caule reptante semicylindrico.
- decum-** **MESEMBRYANTHEMUM** foliis subacinaci-
 bens formibus lævibus glaucis compresso-
 (116) triquetris incurvatis, basi attenuatis
 semicylindricis, angulis obtusis, caule
 decumbente.
- glomera-** **MESEMBRYANTHEMUM** foliis teretiuf-
 tum culis compressis punctatis, caule pani-
 (117) culato multifloro.
- falcatum** **MESEMBRYANTHEMUM** foliis subacinaci-
 (118) formibus incurvis punctatis distinctis,
 ramis teretibus.
- ciliatum** **MESEMBRYANTHEMUM** foliis oppositis
 (119) connatis semiteretibus, stipulis mem-
 branaceis reflexis laceris ciliiformibus.
- deltoides** **MESEMBRYANTHEMUM** foliis deltoidibus
 (120) triquetris, dorso et lateribus muricatis
 impunctatis distinctis.

caulescens MESEMBRYANTHEMUM foliis albidis del-
(121) toidibus lateribus minime dentatis,
angulo carinali integris.

*mutabile MESEMBRYANTHEMUM foliis triquetro-
(122) compressis subacinaciformibus di-
stinctis punctatis, angulis integris car-
tilagineo-marginatis.

filamento- MESEMBRYANTHEMUM foliis æquilateri-
sum triquetris acutis subpunctatis sub-
(123) connatis, angulis scabris, ramis hex-
agonis.

ferratum MESEMBRYANTHEMUM foliis subulatis
(124) triquetris punctatis distinctis, angulo
carinali retrorsum ferratis, flore aceta-
buliforme luteo.

*lacerum MESEMBRYANTHEMUM foliis connatis
(125) obsolete punctatis glaucis compresso-
triquetris acuminatis, angulo carinali
laceris, petalis purpureis.

*spectabile MESEMBRYANTHEMUM foliis perfoliatis
(126) longissimis glaucis punctatis integer-
rimis triquetris, apice subulatis, caule
lignoso adscendente.

pugioni- MESEMBRYANTHEMUM foliis alternis
forme subulatis triquetris longissimis im-
(127) punctatis.

*æquilaterum

**æquilate-* MESEMBRYANTHEMUM foliis confertis
rum subconnatis longis obsolete punctatis
 (128) subæquilateri-triquetris integerrimis,
 caule angulato subradicante prostrato.

edule MESEMBRYANTHEMUM foliis æquilateri-
 (129) triquetris acutis strictis impunctatis
 connatis, carina subserratis, caule an-
 cipiti.

forficatum MESEMBRYANTHEMUM foliis acinaci-
 (130) formibus obtusis impunctatis connatis,
 carina subserratis, caule ancipiti.

acinaci- MESEMBRYANTHEMUM foliis acinaci-
forme formibus impunctatis connatis, angulo
 (131) carinali scabris, petalis lanceolatis.

**maxi-* MESEMBRYANTHEMUM foliis integris
mum (132) lunatis, caule arborecente.

**** INCERTÆ TRIBUS.

† NEW SPECIES.

**teretiuf-* A STEMLESS plant, with the habit of ca-
culum (1) lamiforme.

**puncta-* A STEMLESS plant,
tum (2)

*cylindri- A CYLINDRIC leaved nearly stemless
cum (3) plant.

*margina- A SMALL plant, with the habit of cilia-
tum (4) tum.

*nitidum A HANDSOME plant, much like spinuli-
(5) ferum.

*stellatum A SHRUBBY plant, much like com-
(6) pressum.

*compres- A SHRUBBY plant.
sum (7)

*micro- A SMALL leaved plant, like ciliatum.
phyllum,
Yorkshire,
(8)

*micro- A SMALLISH leaved plant, like hirtel-
phyllum, lum.
Kenfington,
(9)

*aggrega- A SMALL plant.
tum (10)

*humifu- A SHRUBBYISH plant.
sum (11)

*hetero-

*hetero- A STEMLESS plant, somewhat like dif-
phyllum (12) forme.

(*No. 13.) A PLANT like pugioniforme.

(*No. 14.) A PLANT like veruculatum.

(*No. 15.) A PLANT like gibbosum.

(*No. 16.) A PLANT like chrySTALLinum.

(*No. 17.) A PLANT like hispidum.

†† DESCRIBED BY AUTHORS.

cuneifo- MESEMBRYANTHEMUM foliis lanceolato-
lium cuneiformibus oppositis integerrimis
(1) planis sessilibus, cum caule ramoso
purpureo-papulosis. *Gmel. Syst. Nat.*

criniflorum MESEMBRYANTHEMUM foliis ovatis scapis
(2) unifloris. *Gmel. Syst. Nat.*

capillare MESEMBRYANTHEMUM foliis connatis
(3) teretibus papulosis, caule erecto, ramu-
lis unifloris, filiformibus glabris. *Gmel.
Syst. Nat.*

Volkameri MESEMBRYANTHEMUM (Ficoides afri-
(4) cana procumbens latifolia annua, flori-
bus argenteis minoribus) *Fl. Noriberg.*
166.

Hermanni MESEMBRYANTHEMUM (Ficoides africana
(5) annua centauroides,) Herm. Par. Bat.
169.

muscosum MESEMBRYANTHEMUM (Ficoides annua
(6) minima muscosa) Herm. Par. Bat. 170.

To all the abovementioned Mesembryan-
thema I will add the seven following
species, which I have found (since I
wrote the above index) described and
figured by Petiver in his Gaz:—they
appear different from all the foregoing
and from each other.

laurifo- MESEMBRYANTHEMUM (" Blue Cape
lium " fig-marygold, with bay leaves, and
(7) " a parsnip root, the middle of the
" flower is full of threads tip'd with
" purple;") Pet. Gaz. t. 88. 4. cat.
476.

crispatum MESEMBRYANTHEMUM (" Broad curl'd
(8) " leav'd Cape fig-marygold with a
" purple thrummy flower,") Pet. Gaz.
t. 88. 5. cat. 477.

gramine- MESEMBRYANTHEMUM (" Cape fig-
um " marygold, with grass leaves, by
(9) " which, and its five green leaved
" starry

“ starry flower cup, it is distinguished
 “ from others,”) Pet. Gaz. t. 88. 6.
 cat. 488.

clavatum MESEMBRYANTHEMUM (“ Club-leaved
 (10) “ Cape fig-marygold,”) Pet. Gaz. t.
 88. 7. cat. 487.

humile MESEMBRYANTHEMUM (“ Dwarf trian-
 (11) “ gular Cape yellow fig-marygold,”)
 Pet. Gaz. t. 88. 8. cat. 479.

Petiveri MESEMBRYANTHEMUM, (“ Dwarf trian-
 (12) “ gular Cape red fig-marygold,”) Pet.
 Gaz. t. 88. 9. Cat. 470.

dubium MESEMBRYANTHEMUM, (“ Ficoides,
 (13) “ forte, MAURITAN, perexigua, the
 “ natives call this Lowon.”) Pet. Gaz.
 t. 39. 3.

OBSERVATIONS.

THIS may be the same as my minimum,
 but can scarce be nuciforme; its
 ascending and as it were pedunculated
 offsets or branches should seem to pro-
 claim it different from both. Petiver
 appears to doubt its being a fig-mary-
 gold;—by its great resemblance to mi-
 nimum, I think the doubt is done
 away.

ERRATA.

PAGE 205, line 2, instead of *for* read *from*;—p. 4, l. 21, dele *for*;—p. 21, l. 2, for *Mesembryanthema* read *Mesembryanthemum*;—p. 23, l. 2, for *chrySTALLium* read *chrySTALLinum*;—p. 24, l. 9, after *Pulteney* dele 's';—p. 41, l. 26, for *Mesembryanthema* read *Mesembryanthemum*;—p. 41, l. 18, after *from* add *such*;—p. 44 and 45, for the words *murcipula* & *muscipula* read *muscipula*;—p. 55, l. 9, after *cultivate* add *s*;—p. 55, l. 23, for *bispium* read *bispidum*;—p. 70, l. 4, for *chop* read *chap*;—p. 71, l. 9, for *scalpatrum* read *scalpratum*;—p. 95, l. 19, for *chop* read *chap*;—p. 94, l. 4, for *species* read *sorts*;—p. 94, in the Notes, transpose the marks of reference to Miller and Curtis;—p. 101, l. 20, for *aloes* read *aloe*;—p. 112, l. 2, for *Annuae* read *Annua*; l. 21, for *auxillary* read *axillary*; l. 22, for *pidunculi* read *pedunculi*; l. 3, for *Pinnatifidum* read *pinnatifidum*;—p. 139, for *alterns* read *alternis*;—p. 158, for *to touch* read *to the touch*;—p. 161, l. 21, for *caninum* read *felinum*;—p. 286, l. 25, for *gives* read *give*;—p. 445, l. 8, for *planned* read *planted*.

A NUMERICAL INDEX of the Species and Varieties ; arranged after my own Method.

* A N N U A.

THE Plants marked with a single asterisk in the margin of this Numerical Index, are not noticed in the last edition of Linnæus's Species Plantarum.

AND those marked with two asterisks are (so far as I am capable of judging) entirely new, or undescribed ; at least, I find no certain mention of any them in any author I have had the opportunity of consulting.

No.

1*	MESEMBRYANTHEMUM	pinnatifidum.
2	_____	chrysellinum roseum.
2**	_____	chrysellinum album.
3*	_____	limpidum.
4*	_____	sessiliflorum.
5*	_____	glabrum.
6*	_____	Helianthoides.
7	_____	pomeridianum.
8	_____	nodiflorum.
9*	_____	apetalum.
10	_____	copticum.

** B I E N N I A.

11*	MESEMBRYANTHEMUM	papulosum.
12	_____	Tripolium.
13*	_____	caducum.

*** P E R E N N I A.

† SUBAPHYLLA.

14**	MESEMBRYANTHEMUM	minimum.
14**	_____	minimum var.
15**	_____	nuciforme.
16**	_____	moniliforme.

†† SUBA-

†† SUBACAULIA FOLIOSA.

17*	MESSEMYANTHEMUM	testiculare.
18**	_____	fissum.
19**	_____	fissoides.
20**	_____	perviride.
21**	_____	gibbōsum.
22**	_____	pubescens.
23*	_____	digitatum.
24	_____	calamiforme.
25**	_____	subulatoides.
26*	_____	subulatum.
27	_____	bellidiflorum striatum.
27*	_____	bellidiflorum purpureum.
27*	_____	bellidiflorum album.
28**	_____	denticulatum canum.
28**	_____	denticulatum glaucum.
28**	_____	denticulatum candidissimum.
29	_____	rostratum.
30**	_____	rostratoides.
31*	_____	compactum.
32	_____	albidum.
33**	_____	canum.
34	_____	caninum.
35	_____	felinum.
36**	_____	tigrinum.
37**	_____	murinum.
38	_____	dolabriliforme.
39**	_____	dolabriliformoides.
40	_____	difforme.
41*	_____	cruciatum.
42**	_____	angustum.
43	_____	longum.
44**	_____	præpingue.
45	_____	lingueforme.
46	_____	latum.
47	_____	scalpratum.

†† CAULES.

+++ CAULESCENTIA FOLIIS PLANIS.

- 48* MESEMBRYANTHEMUM humifusum.
 49* _____ cordifolium album.
 49* _____ cordifolium rubrum.
 50 _____ expansum.
 51 _____ tortuosum.
 52* _____ pallens.

+++ SUFFRUTESCENTIA FOLIIS SUBTUS ROTUNDATIS.

- 53* MESEMBRYANTHEMUM viridiflorum.
 54** _____ spinuliferum.
 55** _____ carneum.
 56 _____ splendens.
 57** _____ fastigiatum.
 58** _____ reflexum.
 59 _____ geniculiflorum.
 60** _____ canaliculatum.
 61 _____ villosum.
 62 _____ corniculatum.
 63 _____ diversiphyllum.
 64 _____ loreum.
 65** _____ tricolorum.
 66** _____ elongatum.
 67** _____ semicylindricum.
 68 _____ tenuifolium.
 69** _____ spiniforme.
 70* _____ bicolorum.
 70** _____ bicolorum minus.
 71 _____ coccineum.
 72 _____ noctiflorum.
 73 _____ stramineum.
 74* _____ brachiatum.
 75* _____ laeve.
 76* _____ grossum.
 77 _____ stipulaceum.
 78** _____ purpureo-erocum.

79	MESEMBRYANTHEMUM	veruculatum.
80*	_____	molle.
81**	_____	cymbiforme.
82**	_____	pulverulentum.
83**	_____	speciosum.
84	_____	micans.
84**	_____	micans pallidus.
85**	_____	maculatum.
86	_____	tuberosum.
87*	_____	brevifolium.
88	_____	hispidum purpureum.
88	_____	hispidum pallidum.
89	_____	friatum.
90**	_____	hirtellum.
91*	_____	echinatum album.
91*	_____	echinatum luteum.
92	_____	barbatum.
93	_____	hirsutum.
94	_____	densum.

++++ SUFFRUTESCENTIA FOLIIS TRIQUETRIIS.

95	MESEMBRYANTHEMUM	perfoliatum.
96	_____	uncinatum.
97**	_____	viride.
98**	_____	tenellum.
99**	_____	imbricatum.
100**	_____	multiflorum.
101*	_____	bracteatum.
102**	_____	radiatum.
103**	_____	compressum.
104	_____	glaucum.
105**	_____	glaucoides.
106	_____	aureum.
106**	_____	aureum pallidum.
107	_____	umbellatum.
108	_____	spinosum.
109	_____	emarginatum.
110**	_____	emarginatoides.

111	MESEMBRYANTHEMUM	scabrum.
112*	_____	deflexum.
113*	_____	reptans.
114*	_____	australe.
115	_____	crassifolium.
116*	_____	decumbens.
117	_____	glomeratum.
118	_____	falcatum.
119*	_____	ciliatum.
120	_____	deltoides minus.
120	_____	deltoides majus.
121	_____	caulescens.
122**	_____	mutabile.
123	_____	filamentosum.
124	_____	ferratum.
125**	_____	lacerum.
126**	_____	spectabile.
127	_____	pugioniforme.
127**	_____	pugioniforme breve.
128**	_____	æquilaterum.
129	_____	edule.
130	_____	forficatum.
131	_____	acinaciforme.
132**	_____	maximum.

**** INCERTÆ TRIBUS.

+ NEW SPECIES.

133**	MESEMBRYANTHEMUM	teretiufculum.
134**	_____	punctatum.
135**	_____	cylindricum.
136**	_____	marginatum.
137**	_____	nitidum.
138**	_____	stellatum.
139**	_____	compressum.
140**	_____	microphyllum (Yorkshire)
141**	_____	microphyllum (Kensington)
142**	_____	aggregatum.

143** MESEM-

- 143** MESEMBRYANTHEMUM humifolium. 141
 144** ----- heterophyllum. 141
 145** ----- incertae tribus, No. 13. 141
 146** ----- incertae tribus, No. 14. 141
 147** ----- incertae tribus, No. 15. 141
 148** ----- incertae tribus, No. 16. 141
 149** ----- incertae tribus, No. 17. 141

++ DESCRIBED BY AUTHORS.

- 150* MESEMBRYANTHEMUM cuneifolium. }
 151* ----- criniflorum. } Gm. Syst. Nat.
 152* ----- capillare. }
 153* ----- Volckameri, Volck. Fl. Nor.
 154* ----- Hermannii. }
 155* ----- muscosum. } Par. Bat.
 156* ----- laurifolium. }
 157* ----- crispatum. }
 158* ----- gramineum. }
 159* ----- clavatum. } Pet. Gaz.
 160* ----- humile. }
 161* ----- Petiveri. }
 162* ----- dubium. }

ADVER.

ADVERTISEMENT.

IF BUT the germinating rudiments of merit are discovered in the foregoing OBSERVATIONS, I shall meet a sufficient reward; and I shall be encouraged to extend them to the other orders of succulent plants.

IF NOT, let silence content me!—

LET my Botanical readers examine and judge!!—

LET the Public decide!!!—

AND I shall also be encouraged to publish *Flora Cottinghamensis*; or a Botanical Arrangement and scientific descriptions of all the plants I discovered wild in the ancient parish of Cottingham, in the East Riding of the county of York, in the year 1792; with a full relation of their uses, œconomy, and peculiarities.

AND some account of the antiquities, zoology, and natural history of that place.

THE

(20)
THE natural productions of Cottingham
(especially its vegetables) amount to a
number that few parishes in this
kingdom are capable of surpassing.

PRESERVED specimens of them are now
in my possession.

It is the Author's humble wish to throw
himself upon the indulgent clemency
of his lenient readers, for a pardon of
such tautological or other inaccuracies,
as too long escaped his eye for con-
venient correction.

F I N I S.

